Planning for chaos: developing the concept of emergency preparedness through the experience of the paramedic

by

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I dedicate this thesis to my Nan and Grandad Woodward, whose personal tales of nursing captured my imagination as a child. Their passion for this profession was infectious and inspired me, from a young age, to become a Registered Nurse.

Declaration

This thesis is submitted to the University of Warwick in support of my application for the degree of Doctor of Philosophy. It has been composed by myself and has not been submitted in any previous application for any degrees.

The work presented (including data generated and data analysis) was carried out by the author.

Abstract

This thesis aimed to develop an understanding of the concept of emergency preparedness through the lived experiences of paramedics, utilising an interpretative phenomenological analysis (IPA) methodology.

Emergency preparedness is a developing speciality, with a limited evidence base. Current research is mainly atheoretical, with the majority of literature comprising of anecdotal reports, government guidance, clinical protocols, audit and clinical policy. The published literature offers little more than opinion and a retrospective view of experience, with few studies examining and understanding the individual lived experience within this area.

To address the identified gaps in the literature and in line with the idiographic focus of IPA, thirteen paramedics were recruited and face-to-face interviews explored their individual experiences of emergency preparedness. Through data analysis, the following superordinate themes were identified for further discussion:- *self determination*, *control* and *experience-based practice*.

Participants appeared to value their role and the unpredictable environment that they worked in. Personal resilience, an area that they suggested is not covered effectively within individual preparation, was viewed as important. The participants articulated that risk, threat, uncertainty, safety, trust and control were important concepts within individual preparedness. These paramedics valued practice-based knowledge and education as credible and transferrable to their clinical work. Additionally, storytelling appeared as a preferred method of conveying knowledge in an area with minimal real-life experience.

Dimensions of individual preparedness are presented, with the paramedic central to the experience within a conceptual model (the DiEP model), creating a new form of emergency preparedness that reflects the individual paramedic's experience.

Starfish story

Sally, one of the research participants, stated the aim of emergency preparedness is like the *'starfish story'*. As a paramedic, responding to a mass casualty incident, you are never going to save every-one, however you hope that your response will make a positive and meaningful contribution, even if only to one person. The starfish story is included here in its entirety as an example of this…

Once upon a time, there was an old man who used to go to the ocean to do his writing. He had a habit of walking on the beach every morning before he began his work. Early one morning, he was walking along the shore after a big storm had passed and found the vast beach littered with starfish as far as the eye could see, stretching in both directions.

Off in the distance, the old man noticed a small boy approaching. As the boy walked, he paused every so often and as he grew closer, the man could see that he was occasionally bending down to pick up an object and throw it into the sea. The boy came closer still and the man called out, "Good morning! May I ask what it is that you are doing?"

The young boy paused, looked up, and replied "Throwing starfish into the ocean. The tide has washed them up onto the beach and they can't return to the sea by themselves," the youth replied. "When the sun gets high, they will die, unless I throw them back into the water."

The old man replied, "But there must be tens of thousands of starfish on this beach. I'm afraid you won't really be able to make much of a difference."

The boy bent down, picked up yet another starfish and threw it as far as he could into the ocean. Then he turned, smiled and said, ***"It made a difference to that one!"***

adapted from The Star Thrower, by Loren Eiseley (1907 – 1977)

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CHAPTER 1

Introduction and Literature Review

"Kenyans and foreigners died in attacks scattered across the complex. It was the deadliest terror attack in Kenya since al Qaeda blew up the U.S. Embassy there in 1998, killing 213 people. Terrorism experts say the attack bears eerie similarities to the 2008 siege of a hotel in Mumbai, India - another upscale target with Western appeal.

CNN national security analyst Fran Townsend said, "There is no sort of hard perimeter by which you could screen for security purposes, and so it's difficult to protect."

CNN (2013)

This type of global event demonstrates the importance of preparing pre-hospital personnel for overwhelming and unanticipated incidents. In response to this attack, the U.K. Prime Minister David Cameron stated "*we don't have intelligence that something is about to happen, but it pays to be very, very prepared, very, very cautious, and to work out we have everything in place we can, to deal with awful events like this*" (Andrew Marr Show, 2013). This thesis focuses on the paramedic's lived experience of emergency preparedness.

1.0 Introduction

This review examines the concept of emergency preparedness in the field of pre-hospital care, critically analysing relevant literature and identifying

strengths and gaps in the research. This review informs both the aim and research questions of the study, focussed on adding to knowledge and augmenting practice. Emergency preparedness is a complex and broad concept that encompasses health care fields including medicine, nursing and pre-hospital care (Boyd et al, 2012. Lee et al, 2012b. Matheson & Hawley, 2010. Veenema, 2007). It has political, strategic, managerial, clinical and educational dimensions (Lee et al, 2012b. Worrall, 2012. Home Office, 2011. Matheson & Hawley, 2010). Whilst this review is focussed on health-care clinicians' understanding and perceptions applied in a United Kingdom (U.K.) setting, international literature is reviewed for its applicability.

1.1 The view from the emergency room

As an emergency nurse, working in the United States between 2000 – 2002, I gained an insight into how important emergency preparedness was when dealing with a country whose citizens were in shock and scared following the terrorist attacks of 9/11 and the subsequent anthrax attacks. Although living in Arizona, away from the east coast where the incidents were situated, the ramifications were felt within our emergency department. Multiple daily memos were filed in our communication book, seeming to respond to the latest update from state and federal management. The presentation of members of the public who had been exposed to an unidentified white powder became a routine occurrence, alongside the more predictable presentations of an inner city emergency room and regional (level 1) trauma centre. It became evident that our mandatory training sessions on this area were insufficient and ill-prepared us for what we were

dealing with on a day-to-day basis. On further investigation, the evidence-base appeared scant and our response and preparation appeared to be based on gut instinct and the mirroring of other organisations, in different settings. As my practice moved into education and research I began to reflect on the area of preparedness and whether we really know how health-care professionals deal with something that can be so vast, unpredictable and rare. I concluded that further research was required, starting with how front-line clinicians experience and perceive emergency preparedness, to enable a body of evidence to develop, contributing to and shaping future clinical practice. The review of literature conducted for this thesis affirmed this need.

1.2 Thesis structure

The overall structure of this thesis takes the form of eleven chapters, including this introductory chapter.

Chapter one reviews relevant published literature, related to the paramedics lived experience of emergency preparedness. This literature review is structured into three sections; concept clarification (p 22), political and social context (p 48) and the experiences of health-care professionals and emergency preparedness (p 61). A short summary highlights recognised areas of knowledge. In addition, a summary of areas that require clarification and exploration are identified. These form the basis of the research aim and questions, which are presented at the end of this chapter.

This in-depth study, that explores the views of paramedics on their experiences of emergency preparedness, required a research methodology that allowed an in-depth, detailed insight of each individual experience. Interpretative Phenomenological Analysis was chosen to facilitate this approach, enabling exploration of individual experience. Chapter two explains the rationale for choosing the theoretical approach of Interpretative Phenomenological Analysis (IPA), contrasting it with other qualitative research methodologies and justifying its suitability and applicability to meet this study's aims and objectives.

Chapter three presents the research method, design and process, including how ethical review and recruitment issues are addressed. The sample size is justified in the context of other IPA studies. The data collection and analysis process are presented. These methods are situated within an IPA methodological framework and the theoretical links to this framework are central to this section.

Chapter four introduces the reader to the research participants in the form of pen portraits. This written profile provides a contextual background to each individual and is an important component in the presentation of an IPA study, reflecting the idiographic and individualistic intent.

Chapter five details how the data analysis, commentary and related discussion are presented, reflecting an IPA methodological approach. Relevant IPA terminology is defined, before the emerging themes are

presented. The study's aims and objectives are reviewed and the initial presentation of the themes and subthemes are introduced.

Chapters six, seven and eight present the findings that emerged through the data analysis. These are reported under the three superordinate themes: *Self Determination*, *Control* and *Experience-Based Practice*. Within these superordinate themes, subthemes are presented, with direct quotes from the participants, ensuring the presented analysis and discussion is embedded in the participants' experience.

Chapter nine provides a summary of the data analysis and research findings, alongside a discussion of any divergence and convergence within the sample.

Discussion of the research findings, structured around the research questions and emerged superordinate themes is presented in chapter ten. This discussion is supported by relevant literature and theory. In addition, individual dimensions of emergency preparedness, as emerged from the paramedics data analysis are displayed, alongside a conceptual model of emergency preparedness, incorporating the paramedic's lived experience. These sections offer new knowledge in this area, supported by the findings from this study. Importantly, reflecting the paramedics' clinical role, this section suggests implications for clinical practice, identifies areas of conceptual and theoretical development and offers proposals of areas for further research.

The final chapter, chapter eleven, draws upon the entire thesis and offers a reflection of the study, from a methodological and researcher perspective. Discussion on how this research will be disseminated occurs, prior to the thesis conclusion.

1.3 Search Strategy

Literature Search

Keyword searches occurred within the following databases: Applied Social Sciences Index and Abstracts; British Nursing Index; EMBASE; Health Management Information Consortium; Medline; Psycinfo; Scopus (3 monthly, from Oct 2013 – Jan 2015) (described in appendix 1).

This search included article, title, abstract and MeSH terms for each publication. A challenge was the diverse range of terms used for each area (see discussion on p 22) (Boyd et al, 2012. Lee et al 2012a. Veenema, 2007. McMahon, 2007. NeSmith, 2006. Rebmann, 2005.). The NIHR scoping review (Boyd, et al. 2012; p34) noted that "*publications relating to disasters and emergencies tended not to be coded well bibliographically and there is no universal taxonomy, possibly reflecting the different conceptions and variants of the emergency management cycle used worldwide. This heterogeneity made the identification of relevant articles from diverse MeSH headings challenging and it is not possible to guarantee that all relevant articles were identified*". This was not a result of geographical variation, but rather appeared to be a lack of standardisation of terminology within this specialised subject area.

Assistance was sought from the subject librarian with this search and the associated MeSH headings to ensure that a comprehensive review occurred.

The search included the following components:

1) Emergency preparedness (including “emergency planning”, “major incident planning”, “disaster management”).
2) Terms associated with emergency preparedness (including “natural disaster”, “man-made disaster”, “pandemic”, “terrorism”).
3) Pre-hospital care (including “EMS”, “Emergency Medical Service”, “paramedic”, “technician”, “pre-hospital personnel”, pre-hospital agency”, “category 1 responder”, “category 2 responder”).
4) Experiences of emergency preparedness (including “experience”, “perception”, “training”, “roles within”, “motivations”, “barriers”, enablers”, “engagement”.
5) Risk (including “risk perception”, “threat”).

To reflect key developments in the area, it was decided to focus on global literature published in English language since 2001, which is after the terrorist attacks in America and so reflects a fundamental change in attitude (Mitchell et al, 2012. Spaaij, 2010. Adelman & Legg, 2009). During this time period, the speciality of emergency preparedness has gained increased recognition and research literature has gained prominence (Boyd et al, 2012. Challen et al, 2012. Lee et al, 2012a. Lee et al, 2012b. Matheson & Hawley, 2010).

Health-care literature from the USA contains numerous literature reviews and scoping studies, reflecting the attention given to emergency preparedness within America, in contrast to relatively few studies within Europe (Boyd et al, 2012. Lee et al, 2012a. Lee et al, 2012b. Challen et al, 2012). It is important to question whether American studies are generalisable to the U.K, as a result of differences in political, legal and health-care structure (Boyd et al, 2012). However, in the absence of significant U.K. based research, U.S. literature was considered for transferable concepts and outcomes of relevance.

Due to the limited published research literature in this area, retrospective case reviews, policy documents and research from other related health-care areas such as nursing and medicine were included within the literature review. It is acknowledged that the quality of their contribution was often poorer than a research study. Where there was concern over significantly poor quality, such reports were excluded.

Literature from developing countries, research not published in English and emergencies not relevant to the United Kingdom are excluded due to their limited transferability to the U.K. pre-hospital health-care system.

In total, 2117 titles were reviewed. Of these, 327 were relevant to this study.

Grey literature search

Grey literature, primarily Government documents, were reviewed because of their impact on pre-hospital healthcare response, in the context of current policy and guidelines. The majority of these are on-line based, enabling them to be updated rapidly, a strategy that is required in this dynamic area.

The reviewed websites (October 2012 and reviewed at 3 monthly intervals) were considered due their impact on current healthcare and the practitioners working within the service. They are easily accessible, updated frequently and offer an understanding as to the structure that each health-care service works within. They offer an understanding of emergency preparedness from a Government or organisational level. These web-sites are:-

- UK Resilience and Cabinet Office (www.cabinetoffice.gov.uk/ukresilience). (Accessed June 2015)
- Department of Health (DH) (www.dh.gov.uk) Emergency Preparedness department (Accessed June 2015)
- Health Protection Agency (HPA) (www.hpa.org.uk) (Accessed June 2015)
- National Ambulance Resilience Unit (http://naru.org.uk) (Accessed June 2015)
- Royal College of Nursing (RCN) (Accessed June 2015)
- Emergency Nursing Association (www.ena.org) (Accessed June 2015)
- NHS Evidence (www.evidence.nhs.uk/) (Accessed June 2015)

The following research registers were also accessed:-

- NHS National Research Register Archive (www.nihr.ac.uk/Pages/NRRArchive.aspx)
- ESRC (www.esrc.ac.uk/impacts-and-findings/research-catalogue/index.aspx)
- Department of Health Policy Research Programme (www.dh.gov.uk/en/Aboutus/Researchanddevelopment/Policyresearchprogramme/)

Numerous descriptive reports, editorials and commentaries were evaluated. These publications provide context, but the opinions expressed are subjective, reliant on the authors' background and lack research methodology and evidence-base (Boyd et al, 2012. Challen et al, 2012. Lee et al, 2012b). These accounts are included, where appropriate, within this review, but with the limitations noted.

The literature search determined that currently there is a small, but growing evidence-base in this area, with the majority of literature published since 2001. In addition to the limited academic evidence-base, consideration of expert opinion and research from related disciplines is required when reviewing paramedics experience in this speciality.

National Institute for Health Research (NIHR) reviews

A key source of evidence were the NIHR reviews, published in July 2012 (*A scoping study of emergency planning and management in health care: What further research is needed?* Boyd et al, 2012) and November 2012 (*Emergency Planning in Health: scoping study of the international literature, local information resources and key stakeholders.* Lee et al, 2012b). These publications note the challenges of conducting a literature review in the area of emergency preparedness and acknowledge some of the challenges experienced in conducting this review. The lack of U.K. based research, the large proportion (more than a quarter) of articles that were commentaries or editorials, numerous event reports published in a non-standardised format are all noted as challenges. The review concludes, *"the type and structure of evidence that would be of most value of emergency planners and policymakers has yet to be identified"* (Lee et al, 2012b, p35).

1.4 Key concepts and definitions

Definitions and concepts are important in developing understanding in any research area, particularly in ensuring the same concepts are being discussed or utilised in valid and meaningful ways (Rebmann, 2006. Slepski, 2005. Rycroft-Malone et al, 2002. Fawcett, 1992). Terminology must be consistent with language used by the participants. Defining key terms and definitions is crucial, as these determine the parameters of the study area and ensure consistency and understanding.

1.4.1 Definitions

The term **'*disaster*'** has its roots in Latin (and then Greek, French and Italian). The Italians calling it '*disastro*', meaning ill-starred (away from the stars). This connects with the concept that disaster is beyond human control (NeSmith, 2006). This unplanned and uncontrollable characteristic of disasters could be important in enabling understanding of how individuals and organisations plan and deal with emergency preparedness issues.

The term **'emergency'** is used frequently within the literature, in a variety of contexts. WHO (2005) define an emergency as *"a situation where a sudden incident or event has occurred and normally used, local responses will suffice to care for the situation without calling outside help"*. By definition, this term implies urgency and the requirement of action. However, within a health-care context, it does not review the nature of the incident or the number of casualties involved. In contrast, the term 'mass casualty incident', also classified as an emergency, implies multiple injured persons who require intervention from the healthcare organisation.

Major incident is the term used in the NHS (DH, 2005) and the Civil Contingencies Act (2004) and suggests that:-

> *"the Act, the regulations and the guidance consistently use the term emergency, but there is nothing in the legislation that prevents a responder from using the term "major incident" in its planning arrangements for the response".*
>
> Department of Health (2005), p12

This definition demonstrates the interchangeable terminology within policy documentation (Lee et al, 2012b. Hammad et al, 2011. Mudalige et al, 2006. Haywood, 2003). This may reflect that emergency planning is an evolving subject area and international in scope or perhaps the limited extent to which policy draws on published literature and evidence. Whereas the academic literature distinguishes between major incident and emergency, within this context, the terms are undifferentiated. Consequently, confusion may occur when using these terms within an education session and during multi-agency exercises because they focus on the cause of the event, rather than the operational response.

1.4.2 Definitions of emergency preparedness

Emergency preparedness is one phase (stage) of the '**disaster continuum'** and is defined as when professionals *"consider, rehearse and prepare what to do in the event of a disaster"* (Percy et al, 2011; p1). This can include training and exercises, drills and simulations and is focused on preparation, rather than actively dealing with an incident.

There have been few attempts to define emergency preparedness (Hammad et al, 2012. Percy et al, 2011. Veenema, 2007). These are presented and critiqued in relation to individual experience. That is the extent to which

such definitions draw on evidence of the experience of preparing for this type of emergency.

'Preparedness' focuses on the individual, organisation and community planning required for an unexpected clinical incident (Lee et al, 2012b. Olivia et al, 2009.Veenema, 2007). Whilst acknowledgment of individual involvement is recognised, the participation, experience and engagement of the individual remains unclear within these definitions, which tend to focus on organisational level response. However, we know from other areas, such as the military (Berger et al, 2015. Cohen et al, 2013. Tierney et al, 2001) and aviation (Ranon et al, 2015. Piltch-Loeb et al, 2014. Rolfe, 2013. Chen & Chen, 2012) that an understanding of individual experience is vital to effective response. Further analysis to determine how a paramedic is involved in this preparedness activity is required, and this will be addressed within this study.

A comprehensive definition is required to enable individuals involved in the process to understand the key concepts and related theory. Slepski (2005, p426) proposes *"the comprehensive knowledge, skills, abilities and actions needed to prepare for and respond to threatened, actual or suspected chemical, biological, radiological, nuclear or explosive incidents, man-made incidents, natural disasters or other related events"*. Inclusion of knowledge, skills and abilities acknowledges this area as more than psychomotor skills, and suggests an underlying individual perspective yet to be examined in the literature. Whilst acknowledging the diversity and multi-dimensional aspects of the concept of emergency preparedness, a limitation is the lack of

theorisation, which would explain key aspects of the concept. Linked to this all-encompassing definition is the possibility that it could lead to non-standardised approach to training and practice, creating variation in clinical practice and outcome.

Historically, 'disaster planning' was used interchangeably with emergency preparedness. However, current literature limits the use of disaster planning (now used in the context of natural disasters), as modern terrorism, which is man-made and not viewed as a disaster, does not fit within this definition (Matheson & Hawley, 2010). As the nature of mass casualty disaster incidents in the U.K. changes, then adaptation and development of key academic terminology must occur to increase applicability to clinical practice.

In summary, the multi-dimensional aspects of emergency preparedness, as described in editorials and opinion pieces, are poorly defined and described (Stratton, 2014a. Powers, 2009. Auf der Heide, 2006.). In academic literature there is some attempt to classify emergency preparedness into the following categories; political, strategic, managerial, clinical and education (Boyd et al, 2012. Lee et al, 2012a. Veenema, 2007). The political, strategic and managerial literature incorporates risk and threat levels, role and responsibilities, intra-agency working, organisation hierarchy and resource implications (Whetzel et al, 2013. Lee et al, 2012. Bulson, 2011. O'Brien & Reed, 2005). The clinical and education categories include clinical response planning, the management and treatment of casualties, the use of specialist clinical equipment, knowledge retention and health-care professionals'

competency and clinical skill base (Cohen et al, 2013a. Franc-Law et al, 2010. Heinreichs et al, 2010). Although these areas contribute to organisational and clinical service preparation and provide a useful overview of emergency preparedness, a proposed weakness is the limited understanding of how theory impacts on clinical practice and how the individual, working in this area, experiences emergency preparedness.

1.4.3 Definitions of disasters

Other key terms such as 'disaster', 'major incident' and 'emergency' are also used interchangeably (Adelman & Legg, 2009). These add complexity as well as heterogeneity. Veenema (2007, p3) illustrates this by defining disaster as *"any destructive event that disrupts the normal functioning of a community".* Whilst highlighting the destructive aspects, it does not acknowledge the causation and consequence of a disaster or contextualise this to health-care providers, demonstrating some of the complexities of planning for response in this area from both an individual and organisational perspective.

Terms such as 'unexpected', 'disruptive' and 'overwhelming' are frequently used (Khalaileh et al, 2012. Adelman & Legg, 2009. Matheson & Hawley, 2010). Interestingly, these demonstrate the nature of a disaster, but fail to highlight the impact on health-care systems. Additionally, the terms can be applied differently (social, political and environmental), for example, a 'financial disaster' or a 'crop disaster'. In comparison, a mass-casualty incident has repercussions at an individual, community and health-care organisational level. Essentially, the '*impact*' on an individual (Veenema,

2007) characterises a disaster in the health-care discipline, but the literature fails to indicate who or what is affected and does not address the impact on professionals.

To differentiate between the concepts of disaster and emergency, impact analysis is required. For instance, a disaster and an emergency can be classified as man-made (vehicle collision, violence) or natural (adverse weather, earthquake). However, it is the consequence of these incidents that imply a disaster or emergency categorisation. For example, a vehicle collision may overwhelm a rural emergency department (and be declared a disaster), whereas a regional trauma centre may view this case as an emergency due to their clinical resources. The '*mismatch*' of resources is a key distinguishing feature that weakens healthcare systems (Matheson & Hawley, 2010. Adelman & Legg, 2009).

A key observation is that there is often interchangeable and mismatched use of common terms. They offer limited value in health-care because they offer no guidance to the health-care responder as to the type of event they are preparing for, or may be asked to respond to. These ambiguous terms, often with negative connotations, merely describe a generic situation, rather than consider the experience of the individual or provide the necessary detail to enable emergency responders to prepare optimally. Additionally, they do not consider the experience of the individual in preparing for an unpredictable and overwhelming emergency. This next section considers operational definitions of emergency preparedness.

1.4.4 Operational definitions of emergency preparedness

Preparedness, from an organisational perspective, relates to 'proactive planning' required to respond to an incident or disaster (Veenema, 2007). Operationally, the definition of an incident or disaster can differ depending on the professional context that it is being used in (e.g. military, civil aviation and voluntary aid organization) (Haywood, 2003). What is defined as significant in one emergency care organisation may not be a major incident for elsewhere (NHSE, 1998, ALSG, 1996). A large warehouse fire, with no occupants, may be a major incident for the fire service but have limited impact on the ambulance service. This has multiagency training, communication strategy and policy development implications. Much of the literature and government publications utilise operational definitions (DH, 2005, Civil Contingencies Act, 2004) (section 1.4.4). How these are perceived and used by individual health-care providers' during the emergency preparedness process is unknown, which is a significant weakness with the system of healthcare.

For this study, consideration of how the individual paramedic experiences an emergency/disaster is key in preparing an effective response, because of the likelihood that they will be the first health-care professional at an incident. It is reasonable to assume that what a layperson perceives as a disaster, the pre-hospital care workers may categorise as an emergency. This difference in perception and experience is also visible across health-care professionals, with a variety of perspectives offered, depending on the contextual setting of the working environment. By way of illustration,

occupational physicians perceive emergency preparedness as preparation for a health and safety risk within their industry setting (Sterling et al, 2005). School nurses' emergency preparedness involves paediatric injury prevention planning within the school setting (Elgie et al, 2010). These illustrations, although interesting from an organisational perspective, do not offer any detail regarding the individual professionals experience. This difference in context and individual experience needs to inform training and the transition from normal work to emergency preparedness work. Consideration for the individuals' motivation to engage with this area, in addition to examination of barriers of engagement is important in an area that remains poorly defined. It is the understanding of how individuals experience emergency preparedness that is the focus of this study.

Clarification of definitions is necessary to increase understanding of key skills, training and knowledge required by individuals. Clear definitions can drive the development of core curricula through the identification of required knowledge.

1.4.5 Policy definitions

The field of emergency preparedness sits within a wider political context where there is extensive policy development. Policy documents also offer a range of terms that differ from the scientific literature. The frequency of publications has increased over the last decade, reflecting the changing social and political context and likelihood of terrorist incidents and natural

disasters (Mitchell et al, 2012. Worrall, 2012. Boyd et al, 2012. Lee et al, 2012b. Adelman & Legg, 2009).

The Department of Health incorporates an Emergency Preparedness Division and yet fails to define what is meant by this term. The Civil Contingencies Act (2004) defines an emergency as

> *"an event or a situation which threatens serious damage to human welfare in a place in the U.K., the environment of a place in the U.K., or war or terrorism which threatens serious damage to the security of the U.K.".*
>
> The Civil Contingencies Act (2004, p3)

This definition focuses on the consequence rather than the categorisation type or cause of the incident. The consequence of an event or situation is important, but the ramification of an incident differentiates this type of event to the routine response from the ambulance service. Possible outcomes include a health-service response to a mass casualty incident, a public safety issue such as a communicable disease outbreak or specific health risk to the community. This again, focuses on consequences for the ambulance service, rather than provides an insight into individual level preparedness and the impact on the individual paramedic.

Within U.K. healthcare the following definition is used:-

> *"any occurrence that presents serious threat to the health of the community, disruption to the service or causes (or is likely to cause) such numbers or types of casualties as to require special arrangements to be implemented by hospitals, ambulance trusts or primary care organizations".*
>
> DH (2005), p12

This lack of clarity results in challenges in planning comprehensive response strategies, as there is no context for considering the role of the individual who will respond to an incident. This definitions offers no information to the individual health-care professional regarding the type of incident, the response required, the number of casualties that require treatment and the physical and psychological demands of these incidents.

In summary, the components of emergency preparedness primarily focus on descriptive aspects of the incident at an organisational level, rather than the preparation and impact the incident creates at an individual level. We know from other areas, such as aviation (Ranon et al, 2015. Rolfe, 2013. Chen & Chen, 2012), that understanding experiences of people in a pressurised context provides an insight into developing effective strategies for preparedness at both an individual and organisational level. Limitations include the lack of distinction, the specificity to the pre-hospital speciality and the extent to which concepts are drawn from evidence or theory. These all contribute to variability in our understanding and effective organisational response.

1.4.6 Professional context and implications of varying definitions

Prehospital impact

This range of academic and policy definitions presents numerous challenges for the operationalisation of emergency preparedness (Boyd et al, 2012. Lee et al, 2012.b. Powers, 2009. Slepski, 2005) as a result of their ambiguity, lack of standardisation and the multi-agency working that occurs in the pre-hospital environment. These challenges are reviewed in the next section.

Firstly, standardisation of terminology is required for the development of a high quality emergency preparedness evidence-base (Boyd et al, 2012. Lee et al, 2012b. Powers et al, 2009. McMahon, 2007. Mudalige et al, 2006). A key difficulty comes when attempting to interpret the studies in a comparative way. If studies define or conceptualise emergency preparedness in different ways, with little regard or reference to each other, this poses challenges for how practitioners might interpret or compare studies. In addition, an understanding of the broader evidence is not achievable, if it is not evident what the studies focus on and their defining attributes are. Inconsistency in the evidence results in practitioners who may not able to utilise and apply the presented research, and potentially results in the inconsistent implementation of clinical practice (Stratton, 2014a. Stratton, 2014b. Boyd et al, 2012).

Inconsistent terminology also poses challenges for the transferability and generalisability of international studies, into a U.K. context, particularly if

terminology is not understood or recognised, resulting in fragmented evidence base (Boyd et al, 2012. Lee et al, 2012b). Boyd et al (2012) found that the majority of the emergency preparedness literature originates from regions outside of the U.K and this results in limited applicability of findings to impact and improve clinical practice in the United Kingdom, due to possible differences in professional roles, social and political context. It is not clear to what extent this is acknowledged in clinical practice, and subsequently on organisational planning.

Consistent terminology is vital for effective multi-agency working in emergency preparedness (Boyd et al, 2012. Adelman & Legg, 2009. Veenema, 2007. Auf der Heide, 2006). To promote an effective team and enhance communication, terminology needs to be standardised throughout all regions and "blue-light" agencies (fire, police and ambulance). A Delphi study concluded that there were 184 names for 28 operational roles and a standardised naming system for operational roles must be developed (Mudalige et al, 2006) to improve consistency, clear communication and comprehension. Interoperability between agencies and a standardised communication framework are fundamental to effective planning and training (Adelmen & Legg, 2009. Veenema, 2007. Mudalige et al, 2006). The non-standardised definition between agencies must be acknowledged and addressed in order to develop optimum operational efficiency.

Lastly, standardisation of emergency preparedness terminology is necessary for effective movement of staff through NHS Trusts. As workers move

between regions (or are employed as bank staff with minimal orientation), they will encounter unfamiliar and inconsistent terms that may impact on their engagement and ability to practice within this planning context (Mudalige et al, 2006. Carley, 1996).

This section has highlighted the importance of clear, well-defined, consistent terminology in key areas including conceptual, operational and political definitions. The next section reviews key social and political policy documents, referred to as grey literature within the search strategy.

1.4.7 Strategic level guidance

The literature search (section 1.3) demonstrated that the practice of emergency preparedness is mainly driven by policy documents, rather than by a well developed evidence-base and these are considered within this section.

The NHS Emergency Planning Guidance (DH, 2005)

The NHS Emergency Planning Guidance 2005 (DH, 2005) replaces previous guidance to provide a set of directives for all NHS organisations to enhance their potential to effectively deal with and recover from any major incident (not just terrorism or man-made) in relation to legal requirements set out under the Civil Contingencies Act (2004). This guidance emphasises the

difference between local, regional and national level action. This process review is at strategic, rather than an individual workers level.

Since initial publication, the format has changed from print to on-line only, ensuring that revisions can be released immediately in response to new guidance and changes in clinical practice. In addition, numerous supplements have been released. These include guidance for specific sections of the health-care service (for example, acute and foundation Trusts and the ambulance service), plus information on particular incidents (such as the ambulance service dealing with radiological incidents and emergencies, DH, 2010). These additional supplements ensure ease of access and use in a topic that has a dynamic cross-agency approach.

The guidance within this strategic document is mandatory for all agencies involved in emergency planning (including voluntary organisations). It sets out operational definitions, roles, and expectations for planning, preparedness and response. Interestingly, the definitions included within the guidance often differ from the definitions utilised by academics and health care workers, which potentially could cause challenges when utilised within clinical practice (see p 29). The content was developed via "*best practice and shared knowledge*" (DH, 2005), through input from a steering group, although there is no published link to the supporting evidence or literature.

The document offers a service-wide objective for emergency preparedness and response:-

"to ensure that the NHS is capable of responding to major incidents of any scale in a way that delivers optimum care and assistance to the victims, that minimises the consequential disruption to healthcare services and that brings about a speedy return to normal levels of functioning; it will do this by enhancing its capability to work as part of a multi-agency response across organisational boundaries"

DH (2005)

What remains unclear is how this document is accessed and utilised by emergency planners, whether the information within it can be operationalised at a local level and if it is fit for purpose. In addition, it is not clear how these key directives are implemented in local/organisational emergency plans, as this document offers a generic, national overview of expected practice (with the recognition that resources will be adapted at local level, within local guidelines, as required).

The next section considers CONTEST (HM Government, 2009), a policy document focused on countering terrorism.

CONTEST – The United Kingdom's Strategy for Countering Terrorism (HM Government, 2009).

'CONTEST – The United Kingdom's Strategy for Countering Terrorism' (HM Government, 2009) focuses on 4 key areas:- "Pursue, Prevent, Protect and Prepare" with specific acknowledgement of the challenges that the London 2012 Olympic and Paralympics Games create. This strategic document

reviews key threats and determines the most appropriate responses to them. The focus is primarily on the security services, however under 'Preparation' there is a review of the London Bombings (2005) with key recommendations for Emergency Response including the need for inter-agency major incident training for frontline employees, enhancement of multi-casualty triage and the development of emergency care as delivered by Medical Emergency Response Incident teams (Home Office, 2011). As a practitioner, it is not clear from the document how these tactical recommendations can be transferred into operational practice, the impact they have on health-care personnel and no specifics of what enhancements are required are included. The consequence is 'abstraction', potentially leading to uncertainty and variability in clinical practice.

Civil Contingencies Act 2004

The Emergency Planning guidance (DH, 2005) and CONTEST (HM Government, 2009) documents (and their content) exist within the context of a legislative structure, the Civil Contingencies Act 2004. This bill sets out local arrangements for civil protection including areas such as contingency planning, civil protection and emergency powers and defines key terms required (see p 23 for further discussion on key terms).

In the context of this study, (focusing on paramedics), it is critical to note that the Emergency Services (and the Ambulance service) are classified as Category 1 responder. A Category 1 responder is defined as *"a person… likely to be at the core of the response to most emergencies*" (Civil Contingencies

Act, (HMSO, 2004) (see glossary, appendix 3) and these individuals are critical to the emergency preparedness process. This categorisation has impact on their roles in relation to The Emergency Planning Guidance and expected responsibilities. Requirements, according to the Act, include assessing risk and being recognised as core responders in the events of an emergency. It could be argued that these are national guidelines and solely promote roles and responsibilities, whereas the organisation (& their employers) need to demonstrate adaptability within their working environment to meet their communities needs.

In summary, a policy and legislative framework exists, with related guidance supporting health-care organisations to develop their emergency preparedness role. These are driven by political perceptions, rather than a coherent, well-developed evidence base which draws on a wide range of studies to inform policy and practice. Potential difficulties and challenges exist as to how to translate the strategic level guidance to the individual health care worker and how this national guidance can be implemented at a local level as a consideration of individual context or the experience of the individual worker as a responder is broadly absent. This creates challenges for implementation. It is unclear whether practitioners access these documents, and how they utilise their content. Additionally, there is no acknowledgment as to how relevant, appropriate and acceptable they are at practitioner level, as they do not appear to be informed by any insight of individual practitioner experience.

This next section reviews the conceptual and theoretical models that underpin emergency preparedness.

1.4.8 Conceptual and theoretical models

Conceptual models are important because they increase theoretical understanding, display key characteristics of a phenomenon and enable linking between the components that comprise that phenomenon (Arbon, 2006. Rebmann, 2006. Rycroft-Malone et al, 2002). It enables understanding of the phenomenon and can aid in translating academic theory into an operational process. As emergency preparedness is a developing area, the presentation of key areas of the process can aid in the planning of health-care education and provision, and enable practitioners to see the entire process, rather than the section that they may be engaged within their role.

There are a range of conceptual models on emergency planning and response (Lee et al, 2012b. Matheson & Hawley, 2010. Veenema, 2007). Two models, figure 1 and figure 2, have been included because they are currently most relevant to health-care workers based in the United Kingdom (Boyd et al, 2012. Lee et al, 2012b).

The first model (figure 1), taken from Lee et al, 2012b, describes a cyclical model of preparedness, demonstrating that past experience is linked directly to future preparedness. It offers no detail as to the components of preparedness, and no aspect of individual preparedness appears to be considered. Additionally, no information on how an individual or

organisation can operationalize any of these stages is included. The second model (figure 2) taken from Boyd et al, 2012 is more complex, with preparedness situated between planning and a major incident. It suggests that the components of 'structures', 'processes', 'resources' and 'Governance' contribute to plans that are incorporated into the preparedness phase. Once more, this conceptual model does not acknowledge the individual health-care worker and their role within preparedness and response. There is also a lack of detail as to the components of preparedness, which results in challenges for the paramedic to use and implement this model within their professional role.

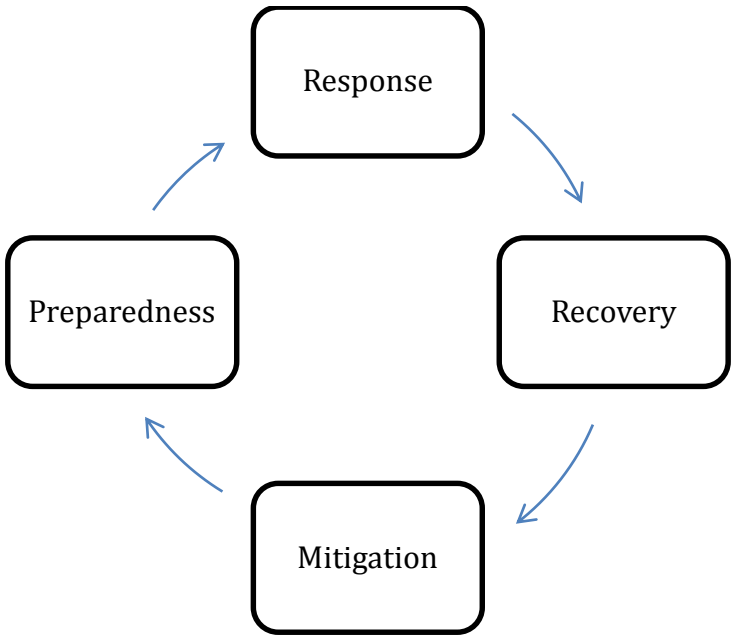

Figure 1. *4-stage model of emergency preparedness (taken from Lee et al, 2012b. p 20).*

The acknowledgement of the preparedness phase of these published models reflects that this is a recognised phase within the emergency preparedness process. This broad term of 'preparedness' has a different implication dependent on what an individual is preparing for, what role they are working in and which preparedness guidance they are following. Within a cyclical model, it implies that preparedness is a 'one-off' phase, where an individual or organisation prepares, responds, recovers and then incorporates their experiential learning into the preparation phase. This model does not differentiate these phases between organisation and the individual workers. Due to the sporadic nature of major incidents, often the preparation phase reoccurs (Bulson, 2011. Goodhue et al, 2010. Adelman & Legg, 2009), without any further progression to response and recovery. This model is viewed as simplistic and does not capture the complexity of the phenomena adequately (Bulson, 2011. Considine & Mitchell, 2009. Veenama, 2007). Boyd et al (2012) have developed a conceptual model for health emergency planning and management (figure 2), incorporating a 'double loop', resulting in a conceptual model that enables continuous development of procedure and resources to improve the emergency planning process.

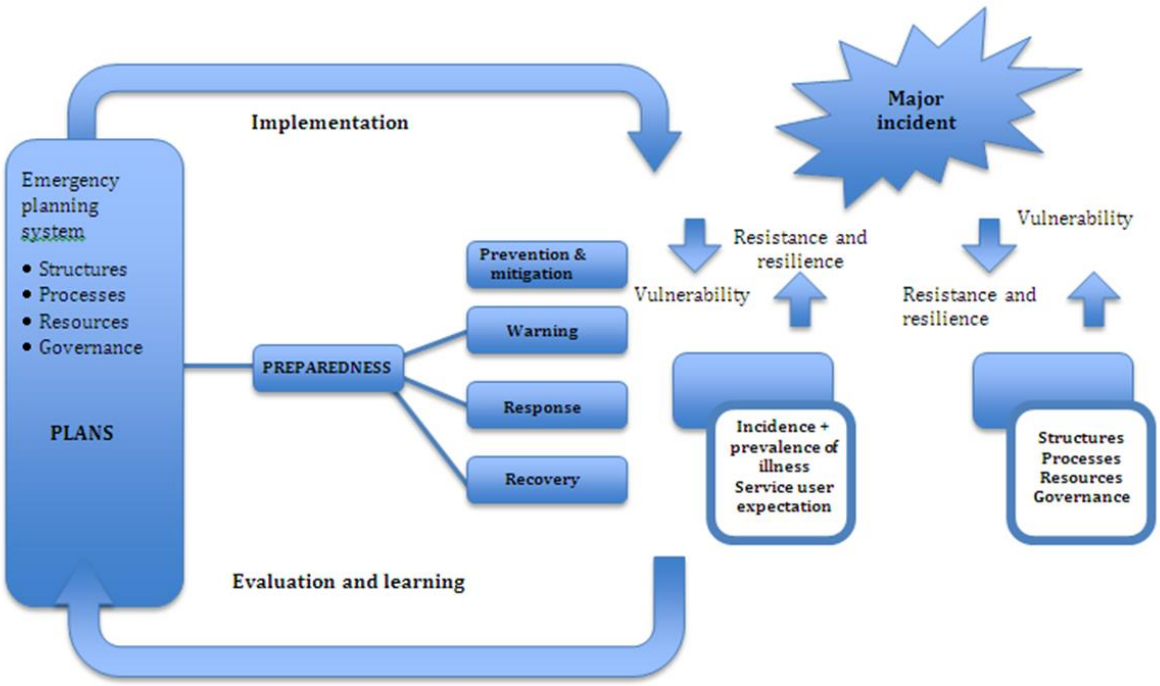

Figure 2. *High level conceptual model of health emergency planning and management. Adapted from Boyd et al (2012), p20.*

Whilst this high level model incorporates multiple aspects of health emergency planning, the main limitation is the lack of acknowledgement of the individual worker within the model. This approach fails to take into account individual experience, role and personal characteristics and their requirements as part of health planning and response, with the focus on organisational plans and preparation. Health care responders are presumably required to 'slot into' this conceptual model, to prepare and deliver care in these events without consideration to their individual motivations and barriers for engagement. A more comprehensive model would recognise the importance of the individual experience, and incorporate them within the organisational plans.

These conceptual models give potential structure to the emergency planning process, but there appears to be little evidence that the Boyd model has been empirically tested. Studies have given little attention to how pre-hospital care workers perceive or apply these models and whether they would be useful in informing practice. It is not known to the extent to which they have been developed collaboratively with health-care professionals. It is well documented that practitioners value 'past experience' and personal instinct, rather than published literature (Boyd et al, 2012. Lee et al, 2012b) (see section 1.6.2). Interestingly, this may be a result of their undergraduate education which was previously a vocational course, having recently been incorporated into the Higher Education system, and the emphasis on reflective learning in health-care that values experience and personal perspective (Blaber, 2008)(see section 1.6.1).

Based on broad and abstract processes they are not related to the detailed sub-areas of this speciality. These conceptual models are not discipline or contextually specific, with their relevance to emergency planners working within a corporate environment brought into question. Consequently, they offer minimal direction to individual health-care workers or organisations as to the specifics of the emergency planning process, and additional work is required to display how they are to be used in clinical practice.

The key challenge to conceptualising an emergency planning is ensuring that that key terms are defined, with characteristics and concepts of this

speciality evident and applicable to clinical practice (Boyd et al, 2012. NeSmith, 2006. Slepski, 2005). Walker & Avant (2005) observe that to develop a concept analysis, defining attributes and their consequences must be identified. This evolving speciality, and the professionals working within it, has not identified defining characteristics that could enhance a valid and applicable emergency preparedness conceptual model (Arbon et al, 2013. Olivia et al, 2009. Gebbie & Qureshi, 2006). This thesis will contribute to this endeavour.

Reviewing these conceptual models, it is apparent that a practitioner never fully reaches a point of preparation (Mitchell et al, 2012. Worrall, 2012). The 'preparedness' phase is part of a continuum and evaluating training effectiveness is also challenging due to the diversity of potential incidents, lack of exposure to real-life incidents and a paucity of relevant learning with individual emergency departments only impacted by a major incident once every 10 years (Conlon & Wiechula, 2011. Carley & Mackway-Jones, 2005). As the role of the educator and paramedic expands and evolves, it is essential that their understanding and experience of this area, alongside their motivations to engage in training are considered, to enhance future educational programs and ensure optimal individual and organisational preparedness (Arbon et al, 2013. Whetzel et al, 2013. Khalaileh et al, 2012). (see section 1.6.6).

It is reasonable to conclude that a 'one size fits all' conceptual model may not be suitable for emergency planning. The structure is dependent on clear

terminology and characteristics, whether the model is to be applied in a corporate, health-care or “blue-light’ scenario and whether the model aims to improve organisational or individual processes.

In summary, the conceptual and theoretical development of emergency preparedness is at an early stage. While some models have been developed, key limitations mean the models only provide a very partial insight into the concept of emergency preparedness and the extent to which they reflect the reality of practitioner experiences.

1.4.9 Summary

This section has considered the definition of emergency preparedness used in both published literature and in policy documents. Emergency planning is often inadequately defined and poorly described as a concept, with a lack of clarity of its dimensions (Boyd et al, 2012. Challen et al, 2012. Lee et al, 2012a. Lee et al 2012b. Rebmann, 2006). However, defining characteristics of the consequences of these incidents include its unpredictable, disruptive and over-whelming impact on the individual and community. The literature reviewed does not account for the individual experience within emergency preparedness, however organisational planning is acknowledged (McCabe et al, 2010. Kollek et al, 2009. Ali, 2008. Milsten, 2000). This individual perspective is important to consider, as working as first responders they are actively engaged in all stages of this process including preparedness and response and their individual experience needs to be considered when developing training, education and preparation. In addition, the relevant areas of Government policy and health-care theory appear atheoretical, with minimal linking of theory and knowledge. The consequences of this can potentially result in significant variations in practice, with health-care professionals having differing understanding on the key concepts of their work.

1.5 Political and Social Context

Emergency preparedness as an evolving discipline continues to be influenced by the political and social context. In response to recent events (terrorist and natural disasters within the last decade), there is an increased focus on having a "*planned, prepared and, where possible, practised response*" to these unscheduled incidents (Home Office, 2005, p9). This section explores the notion of risk and threat and how they impact on the health care workers role.

1.5.1 Introduction

> *"It couldn't happen here,*
> *not here – not this place – not us,*
> *that sort of thing happens to other people".*
>
> Raphael (1986)

The western world has witnessed the terrorist attacks in London, New York City, Washington D.C. and Madrid over the last ten years (Home Office, 2011). These unscheduled catastrophic events create enormous challenges for emergency personnel and their role in preparing for unscheduled episodes. Major incident training, as it was traditionally known, was the primary domain of emergency departments and supporting emergency services, with a clear focus on major transportation incidents but now, with the increasing shift due to the heightened risk of the terror threat and the worry of a major chemical, biological, radiological or nuclear (C.B.R.N.) incident, it is a raised priority for all health care personnel, both within the

hospital environment and for personnel working in pre-hospital care. At a strategic level, guidelines have been put into place and expensive equipment purchased, but there are expressed concerns about training and knowledge levels (Hammad et al, 2012. Worrall, 2012. Mitchell et al, 2012. Khalaileh et al, 2012. Linney et al, 2011. Hammad et al, 2011).

The consequences of not planning and preparing for a major incident include impact on human life (death, risk of disease, long-term disability), impact on local community (grief, business continuity, financial impact) and the risk of fear within the community (Gin et al, 2014. Whetzel et al, 2013. Olivia et al, 2009). In addition, as resources are directed towards the major incident, routine medical care must continue so adverse impact on care quality is minimised. These broad, multi-dimensional consequences demonstrate the importance for emergency preparedness planning and operation and potential, negative implications for organisations and their personnel if they do not manage incidents efficiently.

Unscheduled incidents, which require this dynamic response in addition to generic planning include natural, transportation, industrial disasters, mass gathering and terrorist attacks. The threat is changing in nature, with an increased risk of a 'home-grown' attack such as anarchists and far-right extremists as well as known international terrorist groups (Borum et al, 2012. Leiter et al, 2012. Brown & Cox, 2011). In addition, the perceived risk of a 'lone-wolf' or 'mumbai' style of attack has also increased which has

added a new emergency preparedness dimension for health care workers (Gill, 2012. Borum et al, 2012. Spaaji, 2010).

1.5.2 The evolution of emergency preparedness

The recognition of disaster medicine as a distinct speciality began in the early 20th Century after an influenza pandemic in 1917 - 1918 (Matheson & Hawley, 2010). Between then and 2001, indecisive and uncoordinated responses to disaster events occurred, but after the terrorist attacks in 2001 it became apparent that a more systematic, multi-agency response (planning through to recovery) was required to deliver optimum care in these challenging circumstances (Worrall, 2012. Matheson & Hawley, 2010. Slepski, 2005). This approach has key distinguishing features from routine healthcare as it is multi-dimensional and incorporates various agencies in addition to clinical health-care. It also requires flexible and adaptable planning, dependent on current risk, an adapted triage method (mass-casualty triage) and enhanced knowledge of a personal perspective into how these individuals might respond. In addition, consideration of personal protective equipment that health-care workers may require is a key difference to their normal role (Arbon et al, 2013. Matheson & Hawley, 2010). Due to these distinguishing features, specialist guidance, training, preparation and operation is essential to ensure optimum response in the event of an overwhelming incident.

Major incidents differ in presentation, and are unpredictable and rare (Boyd et al, 2012. McCabe et al, 2010. Matheson & Hawley, 2010) (Appendix 4 shows the history and categories of selected disasters - natural, industrial, transport, mass gathering events and terrorists). Appendix 4 also demonstrates the scope and diversity of incidents, which creates many challenges for planners who must ensure that their preparation is specific enough to enable an adequate response, but generic enough to be applied to any presenting situation. Additionally, the diversity could also pose challenges for how an individual responds to them, due to the number of unknown elements involved and how both generalizable and transferrable learning is captured.

To develop and enhance the future response to unscheduled major incidents it is essential that we ask of previous incidents, *"what did the experience teach us?*" (Veenema, 2007; p132). This should be considered at an individual level, in addition to organisational level because the information gained from these real-life exposures are rare and this new knowledge can be incorporated into individual preparation, education and response (Wachira et al, 2014. Seyedin et al, 2011). A retrospective review has traditionally been used to develop new knowledge in emergency planning due to the challenges of conducting research during an unscheduled event (Ranse et al, 2014. Pollock, 2013. Auf der Heide, 2006). Using 'hindsight', a form of retrospective review, to obtain research data can help the researcher identify common themes and operational issues that health-care workers deal with and thus improve future planning, preparation and

practice in emergency response (Powers, 2009. Auf der Heide, 2006). This concept of critical appraisal, through reviewing events and anecdotal evidence was acknowledged, through anecdotal and published reports, in addition to a formal coroners inquest after the terrorist bombings in London, 2005. Key areas of note included enhancing communication systems for first responders and also reviewing specific aspects of training. However it was noted that *"hindsight is no touchstone of negligence"* (Lady Justice H, 2011, p4), highlighting the importance of preparation that emergency planners must undertake to ensure optimum response.

An understanding of previous incidents is necessary to understand how organisations and health care workers experience emergency preparedness at an organisational and individual level. The resultant policy, often derived from these retrospective reviews, often determines minimum training and education frequency, in addition to minimum standards for resources such as equipment and personnel. The Government strategy is discussed within this section.

1.5.3 Politically driven changes in health architecture

Emergency preparedness is a Department of Health priority, with the focus on NHS planning and multi-agency working (NHS England, 2013). In 2015, the NHS is undergoing critical reorganisation. NHS Trusts are merging and speciality care is focused on designated clinical centres. It is not yet clear of the impact of these changes on emergency preparedness arrangements but

possible issues are changes in organisational contracts, and differing organisational structures and responsibility (Lee et al, 2012a. Boyd et al, 2012). In addition, possible benefits include increased communication between the Department of Health and Public Health England, which has resulted in 'Emergency Preparedness' being identified as an area of importance for the 11-point NHS England business plan for 2013/14 – 2015/16 (NHS England, 2013). The prominence of emergency preparedness within these policy documents increases awareness of some of the fundamental operational structures of this area.

1.5.4 Risk & Threat

In response to the terrorist attacks in America, Spain and London, the Government compiled specific guidance for health-care organisations within the United Kingdom (see section 1.4.7).

A key component of emergency preparedness, as recognised in The Emergency Planning Guidance (DH, 2005) and Contest (HM Government, 2009) is risk and threat. These terms are often used interchangeably, however this section offers definitions and describes how they interrelate and impact on preparedness. Risk and threat impacts on practitioners perceived importance of emergency preparedness, in addition to organisational preparedness strategy. Examination of key definitions, the implications of these concepts and how they impact on healthcare workers experience are now examined.

Risk, threat & vulnerability

Understanding the concept of *'risk'*, *'threat'* and *'vulnerability'* in the context of emergency planning is critical because these concepts potentially impact on resource allocation such as finance, time and staffing levels. In addition, staff perceptions may be formed through their own individual risk and threat assessment, although the literature rarely refers to developing such understanding and we have little insight into the individual level of perception. This section considers the various definitions of risk, threat and vulnerability, reviews the importance of the concept of risk in emergency planning, and will evaluate how clinical personnel view risk and the current threat in this context.

The term *'risk'* is poorly defined in academic literature and is often used interchangeably with terms such as hazard, threat and danger (Turner, 2001). An understanding of the term *'risk'* must occur, to allow comprehension of related concepts such as risk analysis, threat levels and related operational consequences of the associated risk. Although within this context, risk to the individual is rarely considered, rather the focus is on community or population risk.

Risk can be defined as *"the possibility of something bad happening; a situation that could be dangerous or have a bad result"* (Oxford English Dictionary, 2000). This generic definition reflects the negative impact of an

event or incident. However, it does not differentiate between controllable risk (such as the risk of a tree falling on a house) and uncontrollable risk (unnatural, human-made uncertainties such as terrorism). Emergency preparedness, within health-care, typically focuses on uncontrollable risk (Beck, 2002), which is more challenging to plan for due to its unpredictable components. There is a perception at Government level that the global threat of an overwhelming incident remains high, especially in areas with a high footfall, for example sporting events and other mass gatherings. However, despite the heightened state of preparedness and planning, the potential risk may be immeasurable until an actual event happens. Few studies have considered the way individual practitioners manage or experience perceptions of unpredictable or unmanageable risk (Arbon et al, 2011. Balicer et al, 2010. Fischer et al, 2010).

A subject specific definition, used within emergency preparedness guidance, is that risk is *"the product of the likelihood of harmful consequences arising from particular identified hazards or threats and the potential impact of these upon people, services and the overall environment. It is a measure of the potential consequences of a contingency against the likelihood of it occurring."* (DH, 2005). This definition suggests a continuum of risk, with the concept of likelihood, so the professional can view an area as low, medium and high risk and alter their work dependant on this.

Whilst this perspective of risk is determined at Government level, individual risk perception appears subjective, possibly influenced by personal

experience, personal demographics and their professional training and role. This concept is used within risk assessment documentation and is a recognised approach in the Health & Safety environment. It is unclear whether paramedics view this concept as a continuum and what impact this viewpoint may have on practice. This personal perception may be important when considering willingness to work and willingness to engage with this area, in addition to perceiving these formal grading scales as credible information. Few studies have addressed the need for this understanding (Connor, 2014. Damery et al, 2009. Basta et al, 2009).

These definitions view risk and threat from a strategic planning viewpoint whereas individual health-care workers may have different opinions on the risks and threat impact on their work and their lives. These risks include impact on their family, their health, their home and infrastructure (personal factors rather then generic regional issues). It is essential to determine whether they (the healthcare workers) perceive the threat and risk to be real, and to determine what it is composed of, as this is a probable factor as to their willingness to engage with the emergency preparedness aspect of their role (Connor, 2014. Frumkin, 2011. Ehrenstein et al, 2006), and to use components of their experience to inform the dimensions of practice.

Within different professional fields, the term *'risk'* has different meaning and differing impacts, so clarity of context must be determined (Gin et al, 2014. Beck, 2006. Beck, 2002). For example, within the health-care field the risk may be to human life (the general public and health-care workers), whereas

in banking there may be financial impact and in the area of Government the risk could be to business continuity or to infrastructure (buildings and roads).

The term *'threat'* is often used interchangeably with risk despite having different meanings in the context of emergency preparedness. Threat can be defined as:- *"the intent and capacity to cause loss of life or create adverse consequences to human welfare (including property and the supply of essential services and commodities), the environment or security"* (DH, 2005). Willis (2007) suggests that *'threat'* is only present when both 'intent' and 'capability' are combined. Threat assessment is carried out on an 'informal' and routine basis within the ambulance service (for example, what is the threat of a solo responder attending a mental-health patient), as well as the more structured threat assessment (risk-benefit of purchasing equipment). Threat assessment is also a key component of terrorism planning. Assessing threat fits in with the risk assessment process, where future actions are identified. However, rarely does the threat narrative acknowledge the individual practitioner and how a professional conceptualises and manages the threat to themselves in relation to emergency preparedness.

The term *'vulnerability'* is often used alongside *'risk'* and *'threat'* and can be defined as "*the manifestation of the inherent state of the system (eg) physical, technical, organisational, cultural) that can result in damage if attacked by an adversary"* (Haimes, 2004; p699). In relation to emergency preparedness, this could be applied as to whether there are any particular areas that are

vulnerable during the process. For instance, after the terrorist bombings in London, it was noted that interagency communication was vulnerable (Lady Justice H, 2011). Vulnerability could be thought of in the context of how individual paramedics respond. However, vulnerability is rarely conceived in this way. This susceptible area requires further exploration, due to its known vulnerability, in future planning.

These terms are rarely differentiated due to their theoretical connection to the 'risk' concept. These links are highlighted by a model, proposed by Willis (2007), which demonstrates the links between threat, vulnerability and consequence resulting in the concept of risk.

Figure 3. *Risk as a concept (Willis, 2007).*

Whilst this simple conceptual model visually displays the relationship between these areas, a limitation is the lack of context and emphasis on the categories. For example, if the threat is perceived as greater, it can not be

determined, using this model, if an organisation who has ensured preparedness is more vulnerable. Two key things in relation to context are planning and preparation, but this model is at a high conceptual level and does not attempt to account for the type of complexity relevant to emergency preparedness. This model also just displays a concept with no consideration of the individual within this model and how each of these areas impacts on these responders. In reality, they may perceive threat as greater importance than vulnerability, if their training enables them to feel confident and it is unclear on how this would then impact on their risk perception.

1.5.5 Summary

This review shows emergency preparedness in a political context describing some of the key strategic, political and contextual issues. While much of the literature focuses on organisational and policy levels, with some early theorisation, a striking absence is the lack of focus on the individual worker in the context of definitions, policy and guidance. Limited evidence exists on how these individuals view or use strategic level guidance to impact on their personal professional role but overall it provides a limited insight into their experiences and perceptions (Baack & Alfred, 2013. Boyd et al, 2012.Ali, 2008. Carr et al, 2006). This may reflect the status of emergency preparedness, which is still in its infancy. The current social context has been explored along with the review of the terms 'risk' and 'threat' and the impact of these on an organisation, rather than on the individual responder where there has been less focus. How an individual responds in an emergency may be the key to successful operationalization of policy, yet we currently know little about this.

The next section considers the paramedic and their experience of emergency preparedness.

1.6 Experiences of healthcare professionals and emergency preparedness

Before considering the experiences of health-care professionals involved in emergency preparedness, this section examines pre-hospital emergency preparedness clinical practice in order to recognise the environment that paramedics work in and give context to the literature that focuses on their experience. In addition, the importance of experience and how experience is considered in this context is discussed.

1.6.1 Defining pre-hospital care

An appreciation of the work context of paramedics is important when evaluating their experience of emergency preparedness. In contrast to the structure of a hospital or clinic setting, the pre-hospital environment offers numerous uncertainties including the incident scene, working alongside unfamiliar members of the multi-disciplinary team, treatment time pressures and often a physically, emotionally challenging and potentially dangerous work setting (Fjeldheim et al, 2014. Wyatt et al, 2012. Haywood, 2003). This distinct context needs to be considered when exploring how paramedics experience emergency preparedness as it impacts on all aspects of their role from recruitment to clinical response.

Compared to the disciplines of medicine and nursing, pre-hospital care is relatively new in terms of evidence-based practice (Simpson et al, 2012.

Craggs & Blabber, 2008 Donaghy, 2008. Cooper, 2005. Robertson-Steel, 2004. Kilner, 2004a). With the transition to professional registration and the development of a professional body in 2001 (Donaghy, 2008, College of Paramedics, 2000), the focus of the ambulance service is to develop and deliver a credible and quality service, with its own unique identity that connects with other health organisations. Whilst the identity and aim of the ambulance service is important, this thesis examines how the individual paramedic, working within it, experiences an element of their role that the organisation plans and prepares them for.

Previously, there has been an influential association with the military and other emergency services, including the air ambulance and cardiac care, with the sharing of their clinical practice, knowledge and research (Evans et al, 2014. Donohoe & Blabber, 2008. Reynolds, 2004). The paramedic role, from vocational to a dynamic professional, creates new areas of research that will generate contemporary practice models and ownership from this professional group (Evans et al, 2014. Cooper, 2005. Reynolds, 2004). This role development, with the aim of *"a health care professional with a degree, and a commitment to long term development of skills and education"* (JRCALC, 2000; p7), has a potential developmental impact on the emerging area of emergency preparedness, with its limited knowledge base (Cohen et al, 2013a. Linney, 2011).

The role of the paramedic is integral to the ambulance service. Working independently, or as part of a team, the paramedic assesses and provides

health-care at the scene, in urban, rural or remote settings, before transporting the patient to a healthcare facility (WMAS, 2015. GMC, 2012). Their patient load is unpredictable, diverse and unscheduled with an expectation that they will undertake numerous routine roles such as health assessment, health educator, health-care referral, advanced treatment on a routine basis, alongside preparation for national events and major incidents (WMAS, 2015. Donaghy, 2008. Donahoe & Blaber, 2008). Consequently, continuing education for such a role is challenging but essential, with multiple demands placed on the individual worker.

Education, at both pre and post registration level, reflects current service requirements (Cooper, 2005. Kilner, 2004a. Hassan & Barnett, 2002), and focuses on occupational standards and clinical competencies (Clements & MacKenzie, 2005. Cooper, 2005). The educational process appears not to recognise and incorporate individual dispositions, prior experience and personal motivations within their role preparation, resulting in minimal understanding of the paramedics' contextual circumstances within role development (Shields & Flin, 2012. Kilner, 2004b).

The next section considers the evidence base that underpins practice, before a fuller consideration of the individual's experience of emergency preparedness.

1.6.2 Evidence for practice

Using current and best evidence to impact on healthcare policy and practice is the foundation for the delivery of health-care (Shaw et al, 2014. Dawes, 2011. Ellis, 2010). However, the use of research evidence to support emergency preparedness is challenging due to the numerous challenges of undertaking research in this area (Stratton, 2014a. Powers, 2009. Auf der Heide, 2006). These include the unpredictable and complex nature of major incidents, resulting in challenges formulating a credible sample, gaining ethical approval and acquiring relevant data (Stratton, 2013. Challen et al, 2012. Powers, 2009).

In contrast to an established scientific evidence-base, emergency preparedness has a diverse literature base aiding in the development of clinical practice. This literature base incorporates clinical audits, policy documentation and retrospective reviews of real-life incidents (Koehler et al, 2014. Levy, 2014. Wachira et al, 2014. Sollid et al, 2012). A retrospective publication from the London bombings will now be reviewed, with the purpose of exploring how these retrospective reviews are presented within academic and professional journals.

The London bombings, in 2005, produced numerous publications describing how emergency services responded at the scene (Glasgow et al, 2012. Aylwin et al, 2006. Hughes, 2006. Beasley, 2005. Lockey et al, 2005.

Naughton, 2005. Wai, 2005.). These publications shared contextual descriptions, key facts including the number and type of casualties and suggested *'lessons learnt'* from a response perspective, which could be incorporated into future planning. A useful example is a publication, from the perspective of the London Helicopter Emergency Medical response service, detailing helicopter deployment, a timeline of events, complexities at the scene and lessons learnt. Suggested learning points include resource planning, team training, security issues at the scene and patient transportation challenges due to the overwhelming number of casualties (Aylwin et al, 2006. Hughes, 2006. Lockey et al, 2005). Whilst the retrospective reviews were published soon after the incident, a limitation is that the evaluation of response was at an organisational level, without consideration of the individual workers experience. A more comprehensive analysis may have incorporated individual responders experiences including challenges faced, which could be reviewed and learnt from when preparing these individuals for future response. This is common practice in other areas such as aviation (Ranon et al, 2015. Piltch-Loeb et al, 2014. Rolfe, 2013. Chen and Chen, 2012. Grogan et al, 2004).

This is one example of a retrospective review; numerous additional examples are available (Broz et al, 2009. Slepski, 2007. John et al, 2007. Klein & Nagel, 2007. Hiltunen et al, 2007. Leiba et al, 2006. Lockey et al, 2005. Welling et al, 2005. Flabouris et al, 2004. Sharp et al, 1998). The structures of these publications are similar, with information such as a time-line of events, the situation of the incident, number of casualties, and the

health-care service response. The information obtained from these publications has clear limitations, including the challenges of individuals recalling specifics and documenting accurately during an incident (Stratton, 2013. Auf der Heide, 2006). Additionally, they appear to be written in an objective manner, observing how their health-care institution responded to the incident, rather than subjective individual experience of the healthcare workers preparation and exposure to such an incident. These studies do not inform the reader about the time period leading up to an incident, including their professional preparedness and how the pre-hospital care worker deals with the anticipation of an event that is outside of their regular clinical practice or their exposure of response.

The first U.K. scoping exercise on emergency preparedness was published in 2012 and critiqued the lack of published evidence in this area to inform practice. This study concluded that the research base is immature. Quantitative data is lacking, with the majority of publications consisting of grey literature, for example, commentaries, event reports and policy documents (Boyd et al, 2012. Challen et al 2012). In addition, the review highlighted that there is no central U.K. repository where practitioners can access material to review and implement in their clinical practice (Boyd et al, 2012. Challen et al, 2012. Lee et al, 2012a. Lee et al, 2012b). Whilst clinical practice is guided primarily through the use of clinical protocols due to the lack of academic literature, it appears that current clinical decision-making is based on this available grey literature that has a lack of academic rigour (Stratton, 2014b. Boyd et al, 2012. Lee et al, 2012a. Alexander, 2007).

In conclusion, the majority of the published evidence in this speciality is retrospective and descriptive in nature and little is known as to its applicability to a clinicians experience and their clinical role. As a result, it is essential to develop understanding of an individual's motivations, barriers and enablers, in addition to an organisational perspective, because this may aid in the development of the most appropriate and optimum practitioner preparation and clinical response. This study will aim to develop insights into emergency preparedness and the paramedic's experience.

1.6.3 Experience research in healthcare

Reviewing an individual's experience in healthcare is important as it can provide information on how a practitioner makes sense of a situation (Ellis, 2010. Rycroft-Malone et al, 2004a. Rycroft-Malone et al, 2004b). In addition, this subjective experience and subsequent analysis is important as it enables an understanding of the individual's context and how this impacts on their clinical role. This can include specific issues such as motivations and barriers of engagement, decision-making choices, resource issues and personal impact of their professional role. These are important in emergency preparedness where the focus is predominantly on organisational preparation including resources, capacity and team response.

Within this review, no specific studies specifically addressed the paramedic's motivation, experiences, attitudes or perceptions to undertake

an emergency preparedness role. Studies within the following four themes, which relate to experiences in relevant areas were identified; use of evidence, clinical practice issues, training and education and perceptions of emergency preparedness. Reviewing literature from these areas provides insight into health-care professionals' experience of emergency preparedness. These areas are reviewed in the context of the practitioners' experience and key gaps identified.

1.6.4 Paramedics experience of using evidence

Different professional groups experience clinical evidence usage in a variety of ways. For example, evidence-based practice is established in many areas of clinical medicine and nursing clinical policies and guidance and is based on a range of quantitative and qualitative studies (Shaw et al, 2014. Dawes, 2011. Ellis, 2010. Guyatt et al, 1995). However, evidence-base practice is relatively new in a pre-hospital setting, with practice historically influenced by other disciplines, rather than developed within their own context (Simpson et al, 2012. Blaber, 2008). An understanding of how individuals view this evidence, how they use the clinical evidence and how it impacts on their clinical practice and decision making is essential if practice is to develop and practitioners are to engage with academic research in relation to their clinical practice (Shields & Flin, 2012. Cooper, 2005. Kilner, 2004a. Kilner, 2004b).

Evidence-based practice has traditionally incorporated evidence from randomised controlled trials and systematic reviews, in addition to qualitative research evidence (Shaw et al, 2014. Dawes, 2011. Ellis, 2010. Guyatt et al, 1995). It is reasonable to conclude that this established academic process is not as easily applied to emergency preparedness due to the complexities discussed when conducting concurrent research. (Stratton, 2013. Boyd et al, 2012. Powers, 2009). 'Traditional research' plans for when interventions are administered or monitored through careful evaluation. This is more difficult in an emergency preparedness context. Consideration as to the applicability, transferability and influence on practice must occur when devising and undertaking research in this area. A further consideration is what type of information, both content and context, pre-hospital health-care professionals would value to enhance their clinical role.

The importance of evidence-base practice has gained increased significance as practitioners are questioned on their policies and their justification of decision-making skills (Challen, 2012. Lee et al, 2012a. Donaghy, 2008). This *"integration of the best research evidence with clinical expertise and patients' values"* (Sackett et al, 2000, p1) has become standard in clinical medicine and nursing disciplines, which have developed their own evidence and respected knowledge over time. However, paramedic practice is relatively new and consequently, their work *'borrows'* knowledge from the *'traditional'* health-care disciplines such as medicine and nursing (Boyd et al, 2012. Lee et al, 2012. Blaber, 2008). This *'borrowing'* approach is a potential limitation as pre-hospital work and its defining characteristics are unique, resulting in

inconsistencies with in-hospital knowledge being transferred to the pre-hospital work place. Consequently, paramedic practice has minimal pre-hospital theoretical knowledge and is often based on clinical guidelines and protocols (Shields & Flin, 2012. Kilner, 2004b).

Within the last decade, as the paramedic profession has moved into higher education, the requirement for pre-hospital specific evidence is emerging, particularly as practitioners are required to learn academic research skills as a component of their academic qualification (Donaghy, 2008. Cooper, 2005). Boyd et al (2012) observes that "blue-light" practitioners, including paramedics, identify knowledge with clinical competence and 'intuition', rather than draw on the traditional peer-reviewed research publication. It was noted that this group of practitioners are influenced by policy documentation and guidelines rather than empirical knowledge. A further consideration, when reviewing evidence for this professional group, is that despite multi-agency working, these different agencies "viewed' the published evidence from differing perspectives (Boyd et al, 2012. Lee et al, 2012a).

In addition to developing knowledge and ensuring that practitioners can access and interpret the research, consideration must occur as to the transferability and application of the evidence. Boyd et al (2012) suggests two keys areas of knowledge transfer within emergency preparedness. Firstly, there is the transfer of knowledge between academia to clinical practice. Secondly, there is the process of dissemination of knowledge

throughout organisations (in this study's context, the ambulance service). In the context of this study, the type of knowledge and evidence that the paramedic draws on to inform their emergency preparedness clinical practice will be considered. Boyd et al (2012) suggests that these practitioners do not possess the academic skills or have the time to access traditional evidence when working within a clinical role. Reflecting this, an emergency preparedness evidence-base should consider the practical nature of the paramedic, ensuring that the evidence is understandable, transferrable to practice, in addition to being robust (Challen et al, 2012. Boyd et al, 2012). From this review, it is apparent that further consideration of how these individuals experience, access, interpret and use knowledge and evidence within their emergency preparedness role is needed.

This section has discussed the importance of evidence-based practice in healthcare, but highlighted the lack of studies that have explored how the paramedic draws on knowledge and evidence to inform their emergency preparedness clinical practice.

The next section examines emergency preparedness education for paramedics, in the context of individual experience.

1.6.5 Emergency preparedness education and training for paramedics

As the speciality of emergency preparedness develops, there is an increased emphasis on developing and providing credible, beneficial and affordable

training in order to equip healthcare workers with the knowledge and skills necessary to deal with an unexpected major incident (Ingrassia et al, 2014. Hammad et al, 2011. Heinrichs et al, 2010. Hynes, 2006. Markenson et al, 2005).

Guidance on the frequency of emergency preparedness training suggests that *"as a minimum requirement, NHS organisations will be required to undertake a live exercise every three years; a table-top exercise every year and a test of communication strategy every six months"* (DH, 2005; p5). A resulting limitation is that not all staff will be on duty (for example, annual leave, sick leave, maternity leave, study leave) during these organisational training events. Consequently, a proportion of staff may not be exposed to any emergency preparedness training (Baack & Alfred, 2013. Boyd et al, 2012. Conlon & Wiechula, 2011). No formal examination of knowledge gained or retention is required, therefore the effectiveness of this training is not known (Boyd et al, 2012. Hammad et al, 2011. Powers, 2007). These studies appear audit based, confirming the proportion of staff who have undertaken mandatory training, with little awareness of how these individuals experienced this training.

A range of standard emergency preparedness mandatory training packages exist, resulting in potential variations of non-standardised content and the possibility of a non-coherent approach, limiting the possible effectiveness of this training (Boyd et al, 2012. Kollek, 2009. Hammad et al, 2012. Powers, 2007). Whilst it could be argued that different geographic regions have

specific preparedness requirements (urban cities versus rural locations), the lack of an agreed mandatory approach may result in certain localities focusing on, for example, leadership and communication skills and organisational provision, rather than the individual workers requirements, whereas another Trust may focus purely on clinical skills. This potentially results in staff with differing knowledge bases and different deficits of knowledge. In addition, a non-standardised approach is problematic when staff move between regions or are required to work together during major events or large incidents. There is no national teaching framework or accreditation process, therefore any individual who deems themselves as suitable, can teach emergency preparedness to their staff. This potentially impacts on the quality, content and credibility of the education provision (Boyd et al, 2012. Daily & Birnbaum, 2010. Chaput et al, 2007).

Training and education appears to focus on organisational response (Djalali, 2014, Whetzel et al, 2013), core knowledge (Worrall, 2012. Veenema, 2007. Weiner, 2005a), equipment use (Arbon et al, 2013. Worrall, 2012) and clinical skills development (Franc-Law et al, 2010. Heinrichs et al, 2010). There is not evidence that this preparation considers the individual workers requirements, personal context or their experience within this area or builds this into other aspects of response. Further information on this area is required to ascertain the impact of the lack of knowledge of the individual workers experience within their emergency preparedness work.

An additional training implication of emergency preparedness is financial, time and resource costs (DH, 2005). Emergency preparedness training occurs alongside mandatory training, including basic life support and manual handling. However, justifying the allocation of limited resources for planning of low probability incidents can be challenging (Cohen, 2013b. Willis, 2007). Releasing clinical staff to attend mandatory training sessions can have a detrimental impact on staffing levels and a negative financial impact on the Trusts finances. However, training is thought to be an essential component of preparedness (Worrall, 2012. Conlon & Wiechula, 2011. Fung et al, 2009. Wong et al, 2006, NAO, 2002. Haywood, 2003). The current economic climate in the UK has resulted in hospitals cancelling mandatory study days (Jones, et al, 2014.Boyd et al, 2012. Haywood et al, 2006), favouring in-house training (as opposed to national standardised courses), which has a potential impact on staff preparedness and variation in clinical practice between regions.

With a lack of guidance on training content and the pressure on time and money, innovative methods of training for staff are required. Various teaching methods, including table-top exercises, DVDs, live drills and computer simulation are used in clinical practice (Araz & Jehn, 2012. Cohen et al, 2012. Hammad et al, 2012. Boyle et al, 2007. Powers, 2007). These different educational modes each have their own impact on time, financial resources as well as educational efficiency and credibility. It is recognised that limited frameworks for training exist, resulting in generic training being delivered (Cohen et al, 2013a. Franc-Law et al, 2010. Douglas, 2007,

Jennings-Sanders, 2003). The generic nature of this delivery does not appear to recognise the individual worker, their learning style and other personal characteristics that may impact on their motivation to learn and the efficiency of their learning.

Published audits of health-care workers knowledge of major incident plans, aims to determine knowledge recall of Trusts unique plans (normally delivered via in-house training). The literature describes how these plans are poorly remembered (Baack & Alfred, 2013. Milkhu et al, 2008, Wong et al, 2006 & Madge, 2004), which potentially results in an inadequate clinical response. The link between knowledge attainment and clinical practice is unclear through a small-scale audit, due to the static checking of knowledge, with limited consideration of application. In addition, these studies utilise medics as their sample population who by nature of their role, often move from Trust to Trust. The data from these studies concludes that knowledge retention is poor (Baack & Alfred, 2013. Milkhu et al, 2008, Wong et al, 2006 & Madge, 2004), but no study could be found replicating this audit within a pre-hospital care environment. Importantly for this thesis, current studies provide a poor insight into how practitioners absorb information, although they do identify some challenges in delivery.

Paramedic training has traditionally been skill-based. However the move from vocational training to a recognised profession has resulted in an increase in evidence-base to ensure that their training supports their evolving role as paramedic (Simpson et al, 2012. Shields & Flin, 2012.

Donaghy, 2008), with a move away from skills based training to a comprehensive higher education approach. Traditionally in the UK, vocational training has been based on occupational standards that staff are expected to meet (Williams et al, 2010. Clements & MacKenzie, 2005). This competence-based training is popular in healthcare professions, but does not reflect the non-technical aspect of the paramedics role (Shields & Flin, 2012. Williams, 2010a).

The competency, practice led training traditionally found in pre-hospital care is often not evidence-based, rather it is practically based with minimal, underlying academic knowledge (Clements & MacKenzie, 2005). Competency training encourages a minimum standard (Talbot, 2004. Rees, 2004), often viewed as a safe operational standard, and does not promote the idea of the evidence-based autonomous practitioner (DH, 2008). For competencies to be effective, knowledge evaluation must be evaluated and measured. The available literature does not demonstrate these points and no validated and standardised competencies exist.

Within this study, it is proposed that practitioner experience is a recognised form of evidence. This knowledge, gained from clinical experience, is important to consider in practice-based professions. The literature recognises 'professional craft knowledge' and 'practical know-how' as an important form of knowledge, when used in conjunction with other forms of evidence (Powers, 2009. Rycroft-Malone et al, 2004. McCormack et al, 2002) and within the area of emergency preparedness this intuitive, practice-

based experience could be an important component of a developing evidence base (Boyd et al, 2012. Challen et al, 2012). This reflects the concept of evidence as expressed by Staniszewska et al, 2014, as being made up on clinical, economic and practice-based evidence. The latter includes experiences as a focus of evidence.

Additionally, evidence suggests that preparedness education needs to be standardised and content needs to evolve from a defined evidence-base. This development requires recognition of core terminology and consideration of the role that paramedics undertake (Daily & Birnbaum, 2010).

Preparation and education is important to paramedics, to prepare them for potential clinical experience. This clinical experience is discussed within the next section.

1.6.6 Paramedics' clinical experience of emergency preparedness

Paramedics as part of their role as Category One responder role respond to these unexpected and unpredictable incidents (Civil Contingency Act, 2004). It is important to understand their experience within clinical practice, as preparation for their clinical response is a significant component of their preparedness education.

Paramedics at the scene of a major incident switch from their routine assessment of patients into a major incident triage system (termed sieve – treatment and sort) (Matheson & Hawley, 2010). The system identifies clinical priorities and aims to do *"the greatest good for the greatest number"* which is necessary when the demand for care is greater than the available resources. Additionally, consideration must be given to the individual paramedic's personal safety, especially with the risk of a chemical, biological, radiological and nuclear incident (CBRNi). Additional roles include treating the incident as a crime scene and determining the most effective and efficient manner of transporting the patients to a health care facility.

A literature review highlighted the following themes as significant changes that occur when switching from routine work to disaster work. These included differing clinical presentations, personnel changes and unfamiliar clinical setting, for example, working in a decontamination tent (Hammad et al, 2012). This change in role identity, from routine responder at a single patient incident to responding to a complex incident with potentially multiple casualties who are injured or dead, is noted as a significant theme in emergency preparedness literature (Al-Shaqsi et al, 2011). An increased understanding of experience may enable an understanding on how these individuals enable this change in role. It is unclear how the paramedic perceives or experiences the duality of their role during the preparation phase.

1.6.7 Health-care workers' perceptions of emergency preparedness

Understanding the experience, perceptions and attitudes of paramedics is essential in understanding their motivations, the barriers and enablers of engagement in this area. Until these experiences are understood, preparation cannot be developed in a reflexive way. This standardised approach, currently adopted, does not acknowledge the individual's workers context, perceptions, attitudes or requirements, resulting in a standardised model that may remain inflexible and partial.

Studies that explore aspects of individual experience, perceptions or attitudes focus on training needs, knowledge retention and access to training and protocols (Whetzel et al, 2013. Mitchell et al, 2012. Olivia et al, 2009), rather than the individual's experience of emergency preparedness. These studies offer an insight into the practicalities of training but do not appear to capture the personal element involved with this role.

The literature acknowledges that health-care workers feel unprepared to deal with major incidents. Hammad et al (2011) examined South Australian emergency nurses' knowledge and perception of their role in disaster response and concluded, via a mixed methods approach, that three key themes determine practitioners' knowledge and perception of this area. Firstly, previous disaster experience, highlighting the importance of live exercises as part of an education programme. Secondly, the positive impact of disaster education on preparedness, including the use of credible

educators. Thirdly, disaster knowledge; numerous misconceptions regarding disasters were demonstrated, (including the role of health-care workers). Interestingly, all these themes link back to education provision, content and credibility. These outcomes are similar to previous studies, resulting in the conclusion that adequate knowledge and skills are influencing factors in preparedness. However, this study did not look at individual experience of preparedness. Worrall (2012) considered whether minor injury nurses and health-care assistants were prepared for disasters, using an information questionnaire. This study, through examining themes such as clinical triage, critical resources and incident command system, determined that further preparation was needed in all areas. Both these studies focus on the practicalities of response, rather than any aspect of the experience of the individual working within the area.

Previous disaster response experience results in practitioners perceiving emergency preparedness activities as being important and beneficial (Fernandez et al, 2011. Seyedin et al, 2011. Al-Shaqsi et al, 2011). In addition, this exposure results in practitioners that are more confident, aware and realistic of the intricacies of dealing with a major incident. Hammad et al (2011) concluded, through a self-report questionnaire of 558 nurses in a rural Australian setting, that a lack of exposure to real-life incidents resulted in unrealistic expectations of a disaster response and this inexperience may create feelings of stress, inadequacy and potential psychological issues. Literature acknowledges the impact of post-incident stress and post-traumatic stress disorder (Hughes et al, 2007. Polatin et al,

2005), however little consideration occurs to the pre-incident perspective. Fjeldheim et al (2014) analysed 131 paramedic trainees and determined, through logistic regression analysis, that variables such as age, gender, trauma exposure, alcohol abuse and social support impacted on individuals experiencing PTSD and depression, but were unable to determine how these individuals could be supported and these issues addressed within preparation and education. The impact on individual factors contributing to PTSD was also a finding of a study examining the impact of emergency response in a group of Brazilian ambulance workers (Berger et al, 2007). Whilst pre-disposing factors of PTSD include being male, single and repeated exposure to stressful events, they recognised that these individual and personal characteristics were not addressed within role preparation. A Delphi questionnaire, reviewing the understandings and needs of emergency personnel of ambulance clinicians, highlights the requirement to consider this aspect when preparing for an incident. Main themes included the requirement for education on recognising stress and support for themselves from colleagues, peer support programmes, and that this previously unexplored psychosocial dimension of emergency preparedness should be included in education programmes (Drury, 2013). No tool is available to measure this emotional response and it is not currently known if a psychological component is incorporated within the preparedness phase.

For an adequate clinical response to occur, health-care professionals must be willing to undertake their role and work within this environment (Jones

et al, 2014. Stevens et al, 2010. Smith & Hewison, 2012. Williams & Williams, 2010. Smith et al, 2008. DiMaggio et al, 2005). Their decision to respond to an incident is multifaceted and dependent on training, personal safety, personal responsibility, infrastructure and the type of disaster that has occurred (Arbon et al 2013. Al-Shaqsi et al, 2011. Smith et al, 2008. DiMaggio et al, 2005). A cross-sectional survey of Jordanian nurses showed that over 50% had no family emergency plan in place, resulting in a lack of willingness to engage professionally with a community major incident (Khalaileh et al, 2012). A study exploring Australian nurses willingness to work within a disaster, through the use of an online and paper based survey, concluded that individual demographic factors, family factors and workplace factors were barriers to engagement for these professionals, despite a role expectation that they would respond (Arbon et al, 2013). It is unclear whether personal factors are considered during pre-hospital preparedness and whether these additional factors impact on their clinical role and their willingness to participate in a major incident. The lack of a comprehensive base precludes emergency preparedness as a field from practice that incorporates practitioner experience at this time.

Perceived susceptibility to being involved in a major incident may influence the emphasis placed on the importance of emergency preparedness by the individual practitioner. Whetzel et al (2013) highlighted the link between personal and family susceptibility, via a descriptive survey, determining that despite 98.9% of the 177 respondents believed that an incident could impact their local community, less then 50% of nurses surveyed believed

that their hospital is a target and that they did not believe that a terrorist attack would happen to them or their family. This conclusion may vary depending on the geographical location of the study, however more research is required to determine if paramedics perceive themselves are being vulnerable to a major incident and how this notion impacts on their experience of being prepared.

1.6.8 Summary

In summary, paramedics current engagement with emergency preparedness is practical and clinically orientated, focused on operational outcomes, rather than drawing on relevant albeit partial evidence or underpinning insights about experience. A key limitation is the significant lack of conceptualisation into their practice of emergency preparedness and the varying definitions, (Bulson, 2011. NeSmith, 2006. Gebbie & Qureshi, 2006). It is unclear what knowledge or evidence the paramedic draws on to inform their emergency preparedness clinical practice, and whether this includes evidence of experience. The overall result is skills based training with minimal theoretical input. New knowledge will further develop and refine the effectiveness of future clinical practice. There is an important need to substantially develop the understanding of the concept of emergency preparedness by exploring the experiences of paramedics.

1.7 Conclusion of literature review

"Experience is a hard teacher because she gives the test first, the lessons afterwards"

Vernon Sanders Law

It is evident through conducting this literature review that the speciality of emergency planning is in its infancy. Mandatory guidance is prescribed regarding training frequency and professional service roles, and some research has examined nursing and medical staff knowledge acquisition. The majority of studies are audit based, with limitations such as small sample size, evaluating knowledge recall, convenience samples and utilising poor methods.

1.8 Research Aims & Questions

In this study, the principal research aim is enabling paramedics to reflect on their experience of emergency preparedness and what this topic means to them. It is envisaged that unique aspects of their experience will be determined and these can be applied to enhance practitioner education and preparation.

While the literature on emergency preparedness experiences is poor compared to other clinical fields, the review identified key areas where some aspects of experience have been explored. However, these

explorations are partial and poor quality and do not capture the potential complexity of the experience of emergency preparedness, either conceptually or empirically.

The research aim is:-

- To develop an understanding of the concept of emergency preparedness, through the experience of paramedics.

Research questions:-

- What is the experience of the paramedic with regard to emergency preparedness?
- What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?
- What knowledge and evidence do paramedics draw on to inform their clinical practice with regard to emergency preparedness?

The next chapter presents the methodology selected to address these research questions.

CHAPTER 2

Methodology

2.0 Methodology - introduction

The literature review, presented in chapter 1, highlighted a gap in our understanding of how paramedics experience emergency preparedness at an individual level, and this is captured in the research questions that focus on understanding experience, motivations, barriers and enablers.

This chapter provides the rationale for choosing the selected methodology, interpretative phenomenological analysis (IPA). Examination of underlying philosophy and paradigms are considered. Other methodological approaches are discussed and the rationale for not selecting them is also presented.

2.1 Selection of a theoretical approach

The qualitative researcher aims to create a subjective narrative of human experience (Cormack, 2000). The approach has its roots in sociological, philosophical and psychological worlds and it is both inductive and constructive in nature (Moule & Goodman, 2009, Guba & Lincoln, 1982). IPA is, by design, a good fit for exploring the multifaceted issues relating to emergency preparedness, with particular emphasis on emergent thinking using healthcare professionals' personal stories and insights. This also

provides the researcher with an insider (emic) view-point, where perhaps the greatest value is realised in exploring the key issues and how these may inform future planning.

The literature presented in chapter one was also considered from a methodological basis. It is clear that this area of research is predominately atheoretical, with few papers identifying or using a particular methodology. The majority of published literature includes anecdotal reports, government guidance, audit or clinical policy and protocol documentation.

Audit and evaluative research has its roots in clinical practice (Clarke, 2009) and has been used frequently in emergency preparedness studies, highlighting staff knowledge retention and training frequency. Whilst it is important to acknowledge the role of service provision, these reviews offer a limited insight into the understanding of practitioner experience as they do not truly infer anything apart from describing what happened over a particular period of time. Transferring findings into practice, from this approach, is not possible.

This study aims to seek out the understanding and meaning of a human experience, the lived experience of a paramedic involved in emergency preparedness. Listening and understanding their human experience is the key to this research and underpins methodological choice.

A range of methodological approaches exists which may have been suitable for this study. The next section considers their suitability before providing a rationale for the choice of methodology.

2.2 Consideration of possible perspectives

The selection of an appropriate methodology requires the evaluation of differing methodological perspectives for suitability in relation to the research question. Firstly, this study is focusing on how the paramedic, as an individual, experiences emergency preparedness. Secondly, the study is examining how motivations, barriers and enablers impact on the process of individuals' involvement in the emergency preparedness process.

The next section provides an overview of two alternative qualitative methodologies, with a focus on the justification of an interpretative phenomenological approach to address the research questions of this study.

2.2.1 Consideration of ethnography

As the study focuses on developing understanding of experience, ethnography was a possible methodology.

Exploration of *culture* is a key feature of ethnographic research. The methodology was initially used within anthropology and sociology to investigate unique social and cultural characteristics but in recent years, numerous disciplines have utilised ethnography to focus and develop the theory of cultural beliefs and behaviours (Lambert et al, 2011). This

development has resulted in "diversification" and "re-contextualisation" (Welford et al, 2012) of ethnography and has created a field-orientated approach often used within health-care research.

Due to the changing nature of ethnography, there is no one agreed definition and its implications vary, depending on the context (Hammersley & Atkinson, 2007). This results in a methodology with no singular operational approach. Its appropriateness is dependent on the chosen discipline and research aims, so to determine applicability the researcher must identify the defining characteristics.

Key elements of ethnography include naturalism and contextualisation, focusing on *"detailed descriptions of different ways of life"* (Lambert et al, 2011; p19), but these are not defining features as they are often seen in other qualitative research methodologies such as phenomenology. The following characteristics distinguish this methodology from other qualitative approaches:-

- The research occurs within the participant's natural environment.
- There is a recognition of the complexities of the culture, including acknowledgment of rituals, behaviours and customs.
- Research is holistic in nature.
- Culture is central to the research, and the research improves comprehension of a group's dynamics and distinctiveness.

Summarised from Barton (2008)

Applying an ethnographic methodology to the area of paramedics working in emergency preparedness is reflected in the following research question:-

What is the relationship between the culture of the ambulance service (and their workers) and emergency preparedness? How does this culture impact on emergency preparedness?

While ethnography offered an interesting perspective, its focus on studying culture in relation to groups did not fully align with the idiographic focus of this study that explores understanding of individual experience. This study, to address the research questions, requires an idiographic focus, with a discussion on the unique lived experience of the individual health-care worker, and how they make sense of a phenomenon.

Thus, ethnography was not selected for this study. Consideration will now be given to another qualitative methodology, grounded theory.

2.2.2 Consideration of grounded theory

Generating new theory through the dynamic interaction between research subject and researcher is a key feature of grounded theory methodology (Welford et al, 2012. Strauss & Corbin, 1998). This participant orientated approach was traditionally used in sociological research, but has achieved increasing prominence in health-care research in areas such as patient experience, patient satisfaction and patient evaluation (Van Dover & Pfeiffer, 2012. Häggström et al, 2012. Mottram, 2011a. Mottranm 2011b). These

areas are compatible with a methodology where the researcher must continuously reinterpret the subject matter and the research topic as the study progresses, in response to participant involvement using a subjective research framework.

Developed by Glaser & Strauss (1967), grounded theory is based on a '*pragmatic*' philosophical position, aiming to understand previously unexplored social groups through the generation of theory '*grounded*' in the obtained data. However, Strauss later developed this grounded theory methodology to incorporate elements of '*symbolic interaction*' philosophy, where researchers study the theory of '*human group life and human conduct*' (Blumer, 1969) to describe how participants act or engage with their world (Licqurish & Seibold, 2011). Grounded theorists believe that meaning is derived from social interactions, with comprehension through this methodology of verbal and non-verbal socio-cultural symbols (Licqurish & Seibold, 2011).

Whilst numerous styles of grounded theory are acknowledged in the literature, this methodological approach can be distinguished from other qualitative methodologies by its inductive and pragmatic direction, generating new theory that is 'grounded' in the research data. This new theory can then be applied to healthcare practice. The following characteristics are core elements of grounded theory:-

1) The constant data comparison during a consolidated approach to data collection and analysis.
2) The researcher remains open to the data to generate theory.
3) The integration of the researcher into the process.
4) The participation of participants within the research process.

Summarised from Hunter et al (2011) & Licqurish & Seibold (2011)

Grounded theory focuses on the *process* of a social phenomenon, rather than on how individuals make *sense* of a phenomenon, using an exploratory methodology, enabling theory generation. Studies using grounded theory, as a research methodology, intend to generate an overview of a phenomenon, through a larger sample size (Smith et al, 2009), rather than an idiographic and detailed account that IPA offers.

Applying a grounded theory methodology to the area of paramedics working in emergency preparedness is reflected in the following research question:-

What can the paramedics reveal about emergency preparedness, to generate new theory?

This captures the process of recognising the phenomena amongst the group, but does not offer the in-depth, individual insight, description and understanding of human experience that other methodologies such as phenomenology and interpretative phenomenological analysis can offer.

This understanding is important in an area with limited theoretical and conceptual foundation, such as emergency preparedness.

For these reasons grounded theory is a less suitable methodology for this study and further discussion will occur examining a more appropriate methodology to meet the study aims.

2.2.3 Summary

The reviewed methodologies could be utilised to determine factors involved when examining the interaction between the paramedic and their experience of being involved with emergency preparedness. Each has the potential to make a contribution, however, the aim of this study is to develop an in-depth understanding of individual's experiences, in order to build future clinical practice. This individualistic perspective of experience is a significant factor when deciding an appropriate methodology.

The selection of Interpretative Phenomenological Analysis (IPA) (p93 - 111), as the chosen methodology to answer the research aims and questions is now discussed.

2.3 The selection of Interpretative Phenomenological Analysis (IPA)

IPA was initially a research methodology used within psychology to explore an individual's understanding of a significant experience (and their interpretation of the importance of it) (Shinebourne, 2011. Smith, 2011a.

Smith, 2011b. Smith 2011c). However, it is now used within associated health science disciplines to increase understanding of how individuals experience phenomena and the contextual environment in which they live.

The theories of phenomenology, idiography and hermeneutics contribute to the philosophy of IPA. These approaches will now be described, with their application to this study.

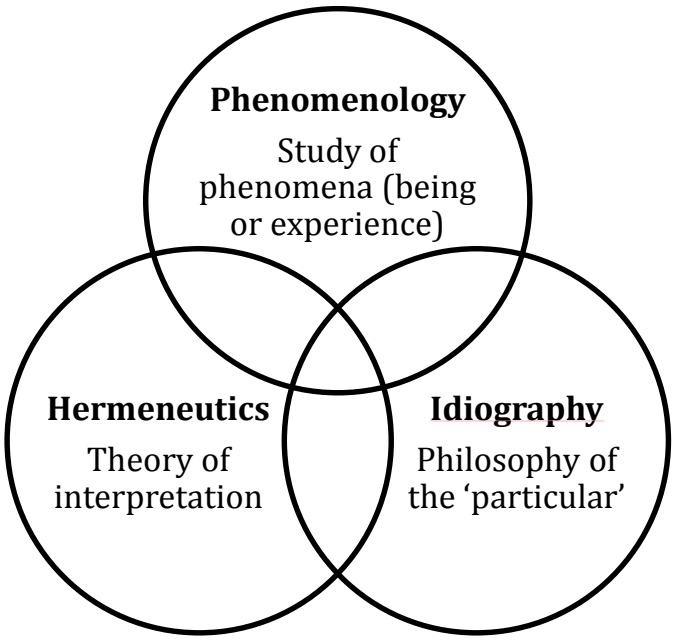

Figure 4. *Theoretical underpinnings of IPA.*

2.3.1 Phenomenology theory in IPA

This study aimed to uncover the lived experience of the paramedic, by exploring thoughts, feelings, emotions, knowledge and understanding in relation to emergency preparedness. To achieve this, an inductive methodology is required, to establish personal perception and by analysis, to determine how the participants, from an individual viewpoint, make sense of their experience. Phenomenology is one form of inductive research, where data is analysed to understand the phenomenon under review (Ellis, 2010). A phenomenological approach (as a component of IPA), with its philosophical origin, will now be discussed and applied in conjunction with this study.

Origins of phenomenology

Phenomenology is considered both a research method and a research philosophy (Tuohy et al, 2013. Dowling & Cooney, 2012. Dowling, 2007) aiming to *"identify the essence of human experience about a phenomenon as described by a participant"* (Welford et al, 2012; p30). This searching for meaning and understanding of human experience (Pringle et al, 2011b. Dowling, 2007), as perceived by the research participant, is a crucial component of this methodology and reflects the study's research aim and questions.

Phenomenology, as a philosophy, is often described in two development phases. Firstly, descriptive (transcendental) phenomenology developed by Husserl. (1859 – 1938). Then Husserl's work evolved from descriptive to interpretative hermeneutic (existential) phenomenology (Heidegger 1889 - 1976) (Converse, 2012. Parsons, 2010. Dowling, 2007). An understanding of the theoretical underpinnings of phenomenology is important to understand the philosophy used within an IPA approach.

Theoretical understanding of phenomenology

Husserl (1859 – 1938) developed phenomenology, focusing on the essence and essential qualities of an individual's conscious experience. This philosophical approach was termed transcendental or descriptive phenomenology and focuses on the concept of '*being*' or '*experience*', with an aim of examining core qualities of a phenomenon, as opposed to examining or interpreting an individuals experience of the phenomenon. Husserl suggested that the essence of an experience would '*transcend*' their contextual circumstances, resulting in a focus on the phenomena in its purest form (Converse, 2012. Dowling & Cooney, 2012. Parsons, 2010. Dowling, 2007). Within the literature, this is often described as enabling the researcher to make sense of the phenomena directly by *'going back to the things themselves'* (Dowling & Cooney, 2012. Smith, 2011c). To achieve this, 'bracketing' off the researcher assumptions through a process of reduction occurs, with the ultimate aim of the research to 'transcend' preconceptions.

This process of bracketing and reduction are key components of transcendental phenomenology (Tuohy et al, 2013. Pringle et al, 2011b).

Husserl's focus on the essential structure of a phenomenon, without prior experience interpreting or attributing meaning to it, creates a 'phenomenological attitude'. His work focused on what is experienced in the consciousness of the individual; using a term he derived called "conscious knowing" (Rapport & Wainwright, 2006). This conscious knowing suggests a divide between the mind and the body, resulting in a separation between mental and physical state, with the resultant aim of describing experiences as they appear to the individual's consciousness (Moran, 2000).

Heidegger's work (1889 – 1976) developed Husserl's phenomenological attitude, but suggested that self-interpretation is a legitimate and important component of understanding shared meaning, and the past experiences and values of the researcher should not be bracketed off, but rather considered and acknowledged within the research study. Heidegger believed that all elements of the phenomenon are significant to understanding an experience, including how they appear in both the conscious and unconscious world (Tuohy et al, 2013. Dowling 2007). This concept of acknowledging the meaning of the participants' lived world, including their relationships, language and context are fundamental to interpretative phenomenology, forming the basis for IPA development (Smith, 2011a).

Heidegger believed that an understanding of a phenomenon comes from our 'being in the world' with meaningful experiences being created through the individual's participation and interaction with their world (Heidegger, 1962). Heidegger uses the term 'dasein', a term meaning *"being human is… a situated activity, a situation in which things are encountered and managed"*, to describe this concept (Reed & Ground, 1997; p62).

Relative to this, the concept of 'temporality' is important in interpretative phenomenology, examining how individuals are living and dealing with the present, but also acknowledging the impacts of their past on them (Smith, 2011c. Parsons, 2010). Temporality is defined as *"how humans are involved in the world, living simultaneously in the present, influenced by the past and always looking to the future"* (Parson, 2011; p62). Experiences leave 'shadows' on the individual's memory and these cannot be discarded or erased. These 'shadows' are an important part of interpreting how an individual perceives themselves within their work. In this studies context, an example of this could be the perception of 'personal protective equipment' (PPE) used within a chemical, biological, radiological or nuclear incident. For a lay-person, perception of this equipment is possibly gathered from films and TV and in reality they have never touched, smelt or been in a PPE, whereas to a pre-hospital provider you could presume that they have regular interaction with this object through training and possibly in real life. These differing interactions will be stored in the individual's memory and this information can only be obtained through studying the individual's thoughts, as there is no evidence of this outside of the mind. Within a

Husserlian descriptive phenomenology the context is 'bracketed' off (McConnell-Henry et al, 2009), whereas within a Heideggerian interpretative approach, the context is considered and interpreted. Contextual findings and exploration of the impact of past experience could not occur through an empirical method such as descriptive phenomenology, emphasising the importance of an interpretative component in the context of this study.

A recognised component of acknowledging the external influences and independent factors that impact an individual's experience and opinion is intentionality (Moran, 2000). Intentionality describes *"the relationship between the process occurring in consciousness, and the object of attention for that process"* (Smith et al, 2009; p13). Husserl recognises that *"the consciousness is always conscious of something"* (Smith et al, 2009. p13). However, Heidegger proposed that rather than bracketing this relationship off, the researcher should consider this connection within their work.

Husserl views an individual's context as 'set' and does not acknowledge the abstracts and concepts that influence the nature of the world (Shinebourne, 2011. Smith et al, 2009). In addition, Husserl's descriptive phenomenology recounts specific attributes of a phenomenon, rather than exploring individuals experience (Tuohy et al, 2013. Giorgi, 2008a). Despite the influence of external factors within practice disciplines, health-care workers often use this methodology in clinical settings when developing and adding to pre-existing theory (King & Horrocks, 2011), whereas a Heideggerian

approach would perhaps increase the depth of understanding of how the individual experiences this context. This is an important distinction to acknowledge within this study.

The importance of the life-world and context of this study is visible in the example below. Husserl suggests that two features contribute to a single experience, however to focus on its essence, descriptive phenomenology focuses on the noema, disregarding the noesis aspect of the experience (Kosowski, 2012).

- what it is we experience (*noema*)
- how we experience it (*noesis*)

King & Horrocks (2011)

For example, three paramedics experiencing the same emergency preparedness training (noema) may have markedly different noesis. The first paramedic may have recently been exposed to a major incident, therefore s/he acknowledges the importance of key operational content, whereas the second paramedic focuses on the educational delivery style of the educator (as s/he is currently studying for a training qualification). Perhaps the third paramedic has never experienced a major incident, is attending on a day-off and his focus is on the free lunch that has been promised. However, the literature review (chapter 1) identified few studies that considered 'noesis' of emergency preparedness.

By using and acknowledging this concept within an exploratory, interpretative phenomenological approach, the researcher is able to increase the understanding of the relationship between the *noema* and the *noesis*, which aids in the comprehension of individual's responses and subjectivity to set situations. Furthermore, this study explored how emergency preparedness is experienced, and how this experience impacts on the individual.

Dasein, temporality and intentionality all contribute to the exploration of human experience, within an interpretative phenomenology context. This study focuses on individual human experience and probing how these paramedics feel, think and comprehend their experiences, within an emergency preparedness context.

The concept of social culture, psychological and physical factors is central to phenomenology and must be defined and identified before the research study begins. In a research context, social culture can be defined as *"an abstraction, a perspective for studying human behaviour that gives particular attention to acquired social behaviour"* (Wolcott, 1999; p68). Within this study, the focus is on individual perspectives and how social culture and context may add meaning. Heidegger (1962) suggests that due to an individuals immersion in their world, meaning has clear links with their social culture. Interpretation will occur between the respondents' reality and their perceived reality. This critical insight will add a new dimension to

the published research in this field, which is mainly descriptive and report focused.

The approach of explaining and comprehending, not just reporting on the phenomenon follows a Heideggerian phenomenological approach (Ellis, 2010). The aim of the study is to generate new knowledge, by establishing key concepts within the speciality, and then applying this knowledge to theory development and practice, a process that Rose et al (1995) recognises as an output from this methodological approach.

Applying a phenomenological methodology to the area of paramedics working in emergency preparedness is reflected in the following research question:-

What is the meaning of emergency preparedness, as a lived experience, for this group of people?

The focus on the individual paramedic, rather than a group of paramedics, is important to this study and this individual focus, in the context of research methodology, is now discussed further

2.3.2 Idiographic theory in IPA

While phenomenology provides a useful context within IPA, idiography is focused on the '*particular*', with an understanding of individual experience,

in contrast with a nomothetic approach that focuses on human behaviour at group level (Smith et al, 2009). The essence of the '*particular'* is relevant to numerous aspects of a research study and this theme will now be discussed.

Numerous authors suggest that within an IPA context, the particular is the 'individual account" (Shinebourne, 2011. Smith et al, 2009). Understandably, as IPA focuses on in-depth responses from a purposively selected sample, it could be presumed that an IPA study gains a generic understanding of each separate account. However, Smith et al, 2009, (p29) suggests that an IPA study "*offers us a concept of the person which is not quite so discrete and contained as the typical understanding of an individual*". These accounts provide us with an understanding of a phenomenon in relation to that specific individual, however due to the nature of the analysis (in-depth, independent and dependent on personal experience), the conclusion is focused on an individual's experience, rather than in a group or population context.

An additional focus on the 'particular' is the focus on 'detail' (Smith et al, 2009). Obtaining data through in-depth one-on-one interviews and the process of IPA data-analysis, results in detailed, thorough data that aims to increase comprehension on the studies phenomena, within a defined context.

In this study, a key aim was to enable paramedics to reflect on their experience of emergency preparedness and what this topic means to them,

through an in-depth interview. After describing their experience in detail, unique aspects of their experience were determined and key distinguishing 'particulars' emerged, in relation to their individual experience, as per the IPA idiographic approach.

2.3.3 Hermeneutic theory in IPA

An additional aspect of IPA, is the interpretative (hermeneutic) component. Within IPA, and modern day research, it reflects the interpretation of data through an active analytical process.

Heiddeger (1962) suggested that interpretation of an experience incorporates awareness of prior assumptions and experience (see section 2.3.1). This process can occur, by viewing the approach as a circular motion, and is termed the hermeneutic cycle. The hermeneutic cycle, presented as a cyclical model, demonstrates an active, multi-directional process of data analysis. This cycle recognises how pre-conceptions and pre-understandings, developed through life experience, impact on data interpretation and analysis. Furthermore, this method notes the varying processes of evaluating data, including reviewing distinct sections, in addition to its entirety (sections and individual scripts within a studies data) (Tuohy et al, 2013. Pringle et al, 2011a). It could be concluded that to review any component of a study you must view it as a whole, with comprehension that the researchers inference of the transcript is dependent on their pre-

conceptions and pre-understandings as well as their experience of interacting with the respondent and the transcript (Smith et al, 2009).

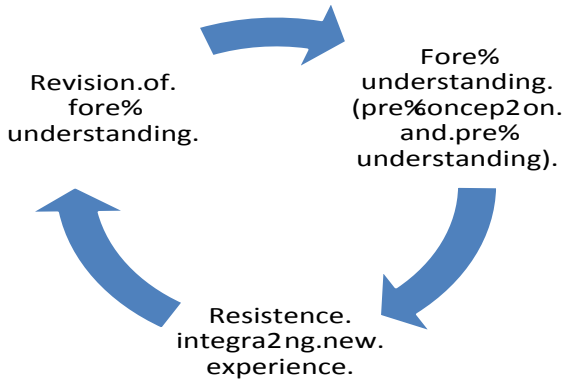

Figure 5. *Hermeneutic cycle. Taken from lecture notes. Shaw, R (2013). IPA workshop. Aston University.*

In addition to the researchers fore-understandings, consideration of the participant's pre-conceptions and pre-understandings must be acknowledged. This interconnection between researcher and participant is termed a 'double-hermeneutic cycle', as the researcher is required to understand how the participant makes sense of their experience, resulting in a description that is constructed from the encounter between researcher and participant (Tuohy et al, 2013. Smith, 1996b. Smith & Osborn, 2007).

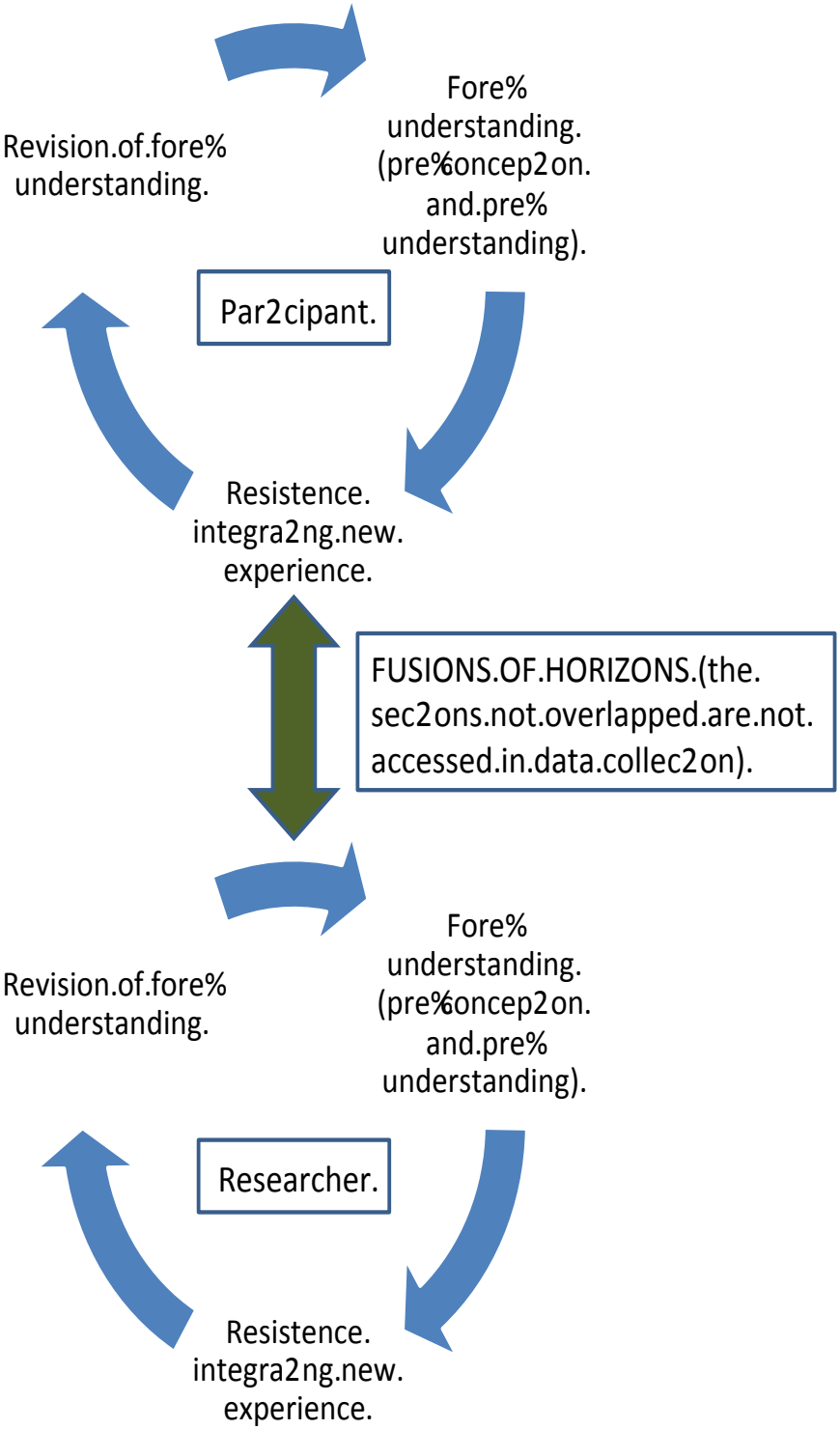

Figure 6. *Double hermeneutic cycle.*

This interpretative approach allows the opportunity to discover meaning that is often hidden (Benner, 1985) and to develop understanding of an experience (Dowling & Cooney, 2012. Clancy, 2013), which is central to an area of study with a limited evidence-base.

2.4 Statement of epistemological stance

Despite the diverse use of IPA in health-care research, its epistemological stance is widely debated within the literature (Larkin et al, 2006). The relationship between the researcher and knowledge is important to clarify throughout the research process.

Reviewing its theoretical history, it could be concluded that IPA has a '*hermeneutic phenomenological*' stance, with the focus on '*meaning making*', through interpretation at a personal level (Tuohy et al, 2013. Pringle, 2011a. Smith et al, 2009). This interpretative stance is located between the '*critical realist*' and '*contextual constructivist*' epistemological position (Smith et al, 2009) and focuses on determining the meaning and power through accounts of the self and sustained through social processes (Smith et al, 2009). IPA consists of elements of '*realism*', with studies focusing on each participants 'uniqueness' and 'personal worth' (Willig, 2008). The *'contextual constructionist'* position reflects that what the participant experiences is influenced by external factors such as culture, history, organisational and

other social constructs. These subjective and interpretative approaches result in IPA researchers not matching their work against scientific and positivist criteria or objectivity, rather they are contextualising their findings to their specific situation.

Within the study, the researcher aims to make sense of paramedic experience of a subject area and 'give voice' to an aspect of emergency preparedness that is deficit in quantitative and positivist research. The interpretative nature of IPA is central to the data analysis but through the use of a research diary, self-reflection and supporting theoretical and conceptual frameworks the interpretative, realist and constructivist elements of this methodology will be evident within this study.

The next page displays is a table that details the IPA assumptions that are required to form a hermeneutic phenomenological epistemology (Larkin & Thomson, 2011) and how this is carried out within the study.

IPA assumptions for a hermeneutic phenomenological epistemology (Larkin & Thompson, 2011)	**How these are evidenced within this study**
an understanding of the world requires an understanding of experience	the theoretical and methodological literature surrounding experience is explored (section 1.6)
IPA researchers elicit and engage with the personal accounts of other people who are 'always-already' immersed in a linguistic, relational, cultural and physical world	Paramedics are immersed in their culture daily. As a researcher I am gathering information on their linguistic, relational, cultural and physical world through interviews and a self-reflective diary
Idiographic approach is important to our work, in order to facilitate a detailed focus on the particular	Data analysis is rooted in an idiographic focus, with word by word analysis (section 3.10) of the 'particular'
Researchers do not access experience directly from these accounts, but through a process of intersubjective meaning-making	The double-hermeneutic circle ensures that the researcher is trying to make sense of the participant making sense of their experience
In order to engage with other people's experience, researchers need to be able to identify and reflect upon their own experiences and assumptions	This is carried out through self-reflection, a reflective research diary, peer interview of the research schedule, presentation at local IPA groups and discussion with supervisors
We cannot escape interpretation at any stage, but we can reflect upon our role in producing these interpretations, and we can maintain a commitment to grounding them in our participants' views	As noted above, self-reflection occurs at all stages of this process. In addition, the discussion is rooted in the participants' quotes and presented in this format.

Table 1. *IPA theoretical assumptions and supporting evidence for this study.*

2.5 Personal Reflexivity

As discussed in section 2.3.3, an IPA study incorporates a double-hermeneutic cycle where *"the researcher is trying to make sense of the*

participant, who is making sense of the experience" (Smith & Osbourn, 2007; p53). In this case, the researcher, who has a clinical background in emergency nursing, is making sense of a paramedic, who is making sense of emergency preparedness. Within an IPA study, in addition to the participant drawing on external sources to make sense of their world, an added complexity is that the researcher is also doing the same, meaning that the transcripts are seen through the researcher's 'experientially-informed lens'.

This double-sense making is an important part of interpretative phenomenological analysis, reflecting the double-hermeneutic process and is acknowledged in this thesis, placing the results within clear contextual parameters.

Several strategies demonstrate personal reflexivity and these ensure transparency and awareness of this personal sense making within this study. These include continuing self-reflection via a research diary (page 138), outsider verification (where the initial findings are reviewed by the research supervisors and a local IPA group in order to assess the authenticity of the accounts, to minimise personal bias). In addition, a researcher interview was carried out by a colleague, using the proposed interview schedule at the beginning of the process to offer an insight and increased self-awareness as to personal perceptions. Incorporating a research diary within field notes enables the researcher to document their progress through the research process, reflect and gain insight on each stage as it occurs, acknowledge factors that may influence analysis, develop

creative and critical thinking skills and add further rigour to a piece of qualitative research (Clarke, 2009. Koch, 2006. Jasper, 2005). This document enables full disclosure of any personal assumptions and choices that may influence data collection or analysis, and can be factored into future discussion, creating reflexive, rather than reflective research (Mantzoukas, 2005). The practical application of a research diary is discussed on page 138.

2.6 Summary – Methodology

The chosen methodology, IPA, enables understanding of the paramedics lived experience of emergency preparedness. This approach, which evolved from Heidegger's interpretative phenomenology, focuses on the participants lived world through obtaining a detailed individual account from the research participant. The hermeneutic component of the process acknowledges the researchers pre-conceptions and fore-understandings, and occurs in this study through a research diary, self-interview and a reflexive discussion with a local IPA group, researcher supervisors and colleagues.

A comparison of methodologies identified a range of possible approaches. Because an interpretative and explorative approach is required to understand how individuals make sense of this poorly described area, IPA is the more relevant methodology. The generation of the evidence, using an exploratory IPA approach, creates a framework and philosophy that will determine how paramedics make sense of emergency preparedness. The

next section details the research method and process that has been developed within this methodological framework.

CHAPTER 3

Methods

3.0 Introduction

The literature review (chapter 1) identified the need to develop our in-depth understanding of emergency preparedness, as experienced by the paramedic. Chapter 2 presents the rationale for the selection of the chosen research methodology, IPA, for this study. The objective of this chapter is to report the research method, design and process. Ethical review and recruitment issues are addressed. Finally, the data collection and analysis methods are presented. The methods for this study are situated within an IPA methodological framework, which is discussed in the methodology chapter (chapter 2).

3.1 Research aim and questions

The literature review presented in chapters 1 & 2 reviewed the evidence base that underpins IPA, particularly in relation to understanding of how paramedics prepare for an emergency (Stratton, 2014a, Rutkow et al, 2014. Stratton, 2013. Franc et al, 2012. Schultz et al, 2012. Daily & Birnbaum 2010. Stevens et al, 2010. Reilly & Markenson, 2009. Reilly & Markenson, 2007. Davies & Hannigan, 2007). Although the literature is very limited in relation to the experience of preparedness through the individual health care worker, with the focus on organisational preparedness, there are some

important studies that have explored individual interactions in clinical roles and teams, and explore skill retention and training experience in relation to emergency preparedness (Ingrassia et al, 2014. Djalali et al, 2014. Worrall, 2012. Linney et al, 2011. Hammad et al, 2011. Bulson, 2011. Heinrichs et al, 2010. Elgie et al, 2010. Cohen et al, 2013a. Milkhu et al, 2008. Weiner, 2005b. Veenema, 2006). However, whilst these studies focus on the practicalities of preparedness such as clinical skills development and methods of training, none explore our understanding of the noesis (section 2.3.1) of paramedic's experience of emergency preparedness at an individual level.

This study aims to address this gap by developing a conceptual understanding of emergency preparedness, through the experience of the paramedic.

The research aim is:-

- To develop an understanding of the concept of emergency preparedness, through the experiences of paramedics.

The research objectives:-

- What are the experiences, in their role as individual paramedics, of emergency preparedness?
- What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?

- What knowledge and evidence do paramedics draw on to inform their emergency preparedness clinical practice?

This next section examines the study in context, presents the recruitment plan and sampling strategy, drawing on IPA, the methodology adopted by this study as detailed in chapter 2.

3.2 Study setting

The selection of the West Midlands region was taken firstly as the preparedness situation in the West Midlands is comparable with other similar urban conurbations within the United Kingdom, with a mixture of urban and rural areas as opposed to solely a major city (Office of National Statistics, 2014) and secondly, for the practical ease of access to the Local Ambulance Service (as the researcher lives locally). The West Midlands Ambulance Service, employing approximately four thousand staff members, covers a population of 5.36 million people, and their ambulance personnel cover five thousand square miles, responding to approximately three thousand '999' calls per day (WMAS, 2015).

3.3 Sample selection

The sample for the study includes individuals who were employees of West Midlands Ambulance Service, working as paramedics. The selection of paramedics as the professional group includes the following rationale:-

1) In order to explore the concept of emergency preparedness it was important to include professionals who are actively involved in responding to incidents. Paramedics are first-line responders in the pre-hospital environment so have an important perspective on preparedness.
2) Recent emergency preparedness literature is focused primarily on the preparation of health-care professionals within the hospital (Nadworthy et al, 2014. Koehler et al, 2014. Evans & Baumberger-Henry, 2014. Boyd et al, 2012. Hammad, 2011) and little has focused on paramedics, in the field, in responding to an incident. These individuals are a critical part of an effective emergency response.
3) Paramedics provided a broadly homogenous group in relation to their first responder role for an unexpected emergency and are suitable, in their homogeneity, for the application of IPA methodological approaches.
4) Guidelines promote cyclical engagement of the ambulance service with emergency preparedness training (NHS England, 2013), ensuring that the paramedics should have exposure to the process of preparedness, even if they have not had practical exposure to a real-life event.

3.4 Research governance and ethical approval

This section reviews the ethical review and research governance approval process required for this study. This section discusses potential ethical issues of this project and how these were addressed. In addition, specific issues raised by the Ethics committee are considered, along with the researcher response. Supporting evidence is available in appendix 5- 14.

3.4.1 Warwick University Ethics Committee

Full ethical approval was obtained from Warwick University BSREC (Biomedical and Scientific Research Ethics Committee) on 14/01/14 (appendix 7). This includes researcher indemnity cover for the study (appendix 8).

3.4.2 NHS R & D approval and WMAS access

Simultaneous approval for NHS Research and Development (R&D) and West Midlands Ambulance Service (WMAS) Trust access was granted on the 04/02/14 (appendix 9 and 10). This was obtained via an integrated research application system (IRAS) submission to the West Midlands (South) CLRN and the WMAS R & D lead.

3.4.3 Ethical considerations

This thesis explores the concept of emergency preparedness, a subject area that has the potential to cause distress. If a participant has experienced a clinical incident prior to data collection, recalling information about this incident during the interview may have induced a negative emotional response. This was carefully considered in the development of the interview schedule, and the material such as the information sheet and consent form, so participants were aware of the content of the study and they could stop the interview process at any time, although this did not occur during any of the interviews. The interviews were conducted in a supportive manner to minimise the risk of distress. Guidance on accessing the Ambulance Service counselling service was available to each participant.

3.4.4 Dual role of nurse/researcher

A key ethical concern, which was identified during the ethical review process, related to my response if I was informed of ethical or unsafe clinical issues arising during an interview. The challenges of the dual-role of nurse/researcher and how to practically separate these identities is highlighted in the literature (Houghton et al, 2010. Clarke, 2009. Ensign, 2003. Orb et al, 2001). The participant must feel that he can speak freely during the interview or it may impact on the quality of their response to the research questions. However, the nurse researcher has a professional obligation to the Nursing & Midwifery Council Code of Conduct (NMC,

2008), and understands that unsafe practice must be reported to an appropriate person or regulatory authority (Holloway & Wheeler, 2010). A discussion occurred with both my supervisors and a Professor of Nursing regarding the most appropriate response. It was concluded that a short statement would be included in the research documentation saying that as a Registered Nurse, the researcher is duty bound by the nursing Code of Professional Conduct (NMC, 2008) and any ethical issues would be followed up, in a sensitive manner, with a service manager.

3.5 Sampling strategy

A purposive approach was utilised in selecting the sample. This mode of sampling reflects the phenomenological component of IPA, as it intentionally includes members of the population under study who have the specific attributes and experience of the phenomenon being studied (Wagstaff, & Williams, 2014. Ellis, 2010, Smith et al, 2009. Cohen et al, 2007. Moule & Goodman, 2009). The specific attributes sampled for this study were that the participants were registered clinical paramedics, employed by West Midlands Ambulance Service, who were likely to have experience of emergency preparedness.

3.6 Access and recruitment

Access was negotiated via West Midlands Ambulance Service R & D lead. Recruitment was via in-house weekly e-mail briefings and printed signs on

the Ambulance Hubs noticeboards (Appendix 11). Initial recruitment was slow due to service demands so phone contact with the Trust research lead occurred, with the Trust lead e-mailing managers directly asking for them to promote the study to their staff. The use of a '*gatekeeper*' was beneficial as they were able to establish and encourage dialogue with potential participants (Jessiman, 2013. King & Horrocks, 2011. Walker & Read, 2011). Potential participants contacted the researcher directly and information about the study was sent out via e-mail (including the Participant Information Sheet and the consent form). Follow-up queries were responded to via phone and then a meeting time and place was confirmed for the interview.

The paramedics who responded to the recruitment call included on-the-road paramedics and members of the West Midlands Hazardous Area Response Team (HART). The HART paramedics are under contract with WMAS but their health response role is part of the Home Offices national capability framework (NHS England, 2014). These individuals had similar characteristics in terms of working as registered paramedics and undertaking emergency preparedness as part of their role. The decision was taken to analyse the participants as one group, as no two people would ever have exactly the same experience of a focus area, even if they were recruited from the same work team. IPA accounts for the individual lived-experience (Wagstaff & Williams, 2014. Smith et al, 2009) and emergency preparedness will mean *'some-thing'* to this closely defined group. Convergences and divergences will be visible within the group, which will be linked to their

experience of being a paramedic. During the data collection phase, thirteen paramedics consented to participate in this study.

3.7 Sample size

A small sample size in IPA research is common (Wagstaff et al, 2014. Smith et al, 2009. Brocki & Wearden, 2006. Smith, 2004. Reid et al, 2005. Robson, 2002), with the aim to "*illustrate, inform and master themes by firmly anchoring findings in direct quotes from participant accounts*" (Pringle et al, 2011a. p21). The literature notes the positive impact of single case studies, with the emphasis on depth, rather than breadth of analysis (Smith et al, 2009). The quality of data analysis is a key component of IPA, and this process requires '*time, reflection and dialogue*' which can be challenging with a larger sample size (Smith et al, 2009. p52). Using a sample size of thirteen participants reflects the idiographic component of IPA, and enables the subtle analysis of words and phrases that are required for this in-depth review of the chosen experience (Pringle et al, 2011a. Collins & Nicolson, 2002). This approach allows the participants to "*think, talk and be heard*" (Reid et al, 2005, p23) and ensures that their individual experience remains central to the study.

Each interview is in-depth, lasting around 36 minutes to 1 hour 40 minutes in order to obtain the required depth and richness of data (Wagstaff & Williams, 2014. Ellis, 2010. Biggerstaff & Thompson, 2008) and starts with an open-ended question related to the overall subject area (Larkin &

Thompson, 2012. Moule & Goodman, 2009). The themes drawn from the singular transcript can then be mapped across the experience of the group of paramedics. In conclusion, a total of thirteen participants were recruited. All were employed as paramedics at West Midlands Ambulance Service. This sampling strategy and size conforms to IPA methodological guidance (Smith et al, 2009) and results in a rich, in-depth account of an individual's experience of emergency preparedness.

Participant pen portraits, enabling a contextual understanding of the participants experience are included in chapter 4, as is common practice in IPA. These include detailed demographics regarding their role within the ambulance service. The names of these individuals have been changed to protect their identities.

3.8 Interviews

This study was exploratory and interpretative in nature, and to ensure rich, in-depth data to reflect the IPA approach (Wagstaff & Williams, 2014. Smith et al, 2009. Brocki & Wearden, 2006. Biggerstaff & Thompson, 2008) semi-structured interviews are the chosen data collection method. This section presents the rationale for using interviews for data collection and examines some of the practical elements experienced during this phase of the research study.

3.8.1 Justification of interviews as a method

The aims and objectives of this study, underpinned by the IPA methodology, demanded that an in-depth approach was used to collect data. Interviews, as a method, enable participants to tell their story, in their own words and be understood within their own context. Advantages to this data collection method include the ability of the researcher to observe, in addition to listen, to seek further clarification of the participant's response and to explore more complex areas of discussion in detail (Doody & Noonan, 2013. Al-Yateem, (2012). King & Horrocks, 2011. Holloway & Wheeler, 2010). This adaptability allows the research to consider the individuals lived experience, within the context of the interview schedule, which is central to IPA and so this method complements the intention of the methodology.

Whilst numerous research methods may enhance knowledge on emergency preparedness; interviews, focus groups and research diaries are the preferred data collection methods to gain a rich, descriptive and a first-person perspective required for an IPA study (Wagstaff & Williams, 2014. Pringle et al, 2011a. Smith et al, 2009. Brocki & Wearden, 2006). An individual's perception, observation and understanding of defined phenomena, in this study their experience of emergency preparedness, are at the core of an IPA methodology.

While focus groups facilitate the collection of rich data, the information obtained is often a 'collective' view due to the nature of a group discussion

(Ellis, 2010). Furthermore, the group dynamics can be problematic due to individual personalities within the group (Ellis, 2010. Peterson and Barron, 2007). Confidentiality is also a potential issue, with colleagues discussing their personal opinions openly within a group setting (Moule & Goodman, 2009. Barbour and Schostak, 2005). If this study focused on organisational preparedness, then the addition of focus groups as well as interviews would be considered. However, for the purpose of this study, focus groups are less appropriate to gain information from an individual perspective.

Research diaries are also a common IPA data collection method (Smith et al, 2009) and often result in more precise and comprehensive data than a traditional face-to-face interview (Moule & Goodman, 2009) due to chronological reporting. This approach is beneficial for examining service users life-style behaviours or symptom tracking (Smith et al, 2009). However, within this context, participants may not have experienced this subject area, apart from their routine training, resulting in a decrease in participant co-operation (Moule & Goodman, 2009) and resulting in minimal data to analyse. For these reasons, research diaries were not used within this study.

In this study, semi-structured one-on-one interviews were utilised to enable participants to "*tell their stories, speak freely and reflectively and develop their ideas"* (Smith et al, 2009, p59) and have been commonly used in IPA. This method enables the researcher to obtain the necessary information, while the participants have the opportunity to explore the issues on their

own terms (Walker, 2011, Brocki & Wearden, 2006. Morse & Field, 1996). An interview schedule (appendix 12) ensures that the questions are specific and appropriately constructed before the interview (King & Horrocks, 2011. Walker, 2011. Smith et al, 2009). Due to the interpretative nature of this approach and the acknowledgement that paramedics are "*experiential experts*" on emergency preparedness, the schedule may be adjusted as required during each interview (Doody & Noonan, 2013. Smith et al, 2009). Adaptability is a necessary part of these interviews and the researcher acknowledges this issue before the interviews are carried out and aims to remain flexible in approach.

Research interviewing is not '*merely the neutral exchange of asking questions and getting answers…. it is an active process that leads to a contextually bound and mutually created story*' (Fontana & Frey, 2005, p696). Through this method, the researcher can obtain an awareness of the social context through clarifying the meanings that respondents attach to their experience (Fontana & Frey, 2005). In addition, one to one interviews allow a relationship to develop between researcher and participant and enables individuals to "*tell their stories*" by conveying their thoughts on a given subject (Smith et al, 2009). This exploratory and interpretative approach is critical in an IPA study where the researcher is trying to '*make sense*' of how their respondents interpret a phenomena (Wagstaff & Williams, 2014. King & Horrocks, 2011, Smith & Osborn, 2008). A clear benefit is the potential depth of data that other techniques such as questionnaires cannot obtain, as it enables participants to discuss and explore their thoughts and perceptions

rather than the interviewer asserting their assumptions through strategic questionnaire planning (Doody & Noonan, 2013. King & Horrocks, 2011. Cormack, 2000).

Interviews, as a research method, utilise the theoretical approach of phenomenology (via understanding a phenomenon through the participants words), idiography (through obtaining a detailed, contextual account) and hermeneutics (the relationship between various concepts involved in a phenomenon) (Smith et al, 2009). These three areas are defining characteristics of IPA (see section 2.3).

3.8.2 Interviews – informed and process consent

Prior to the interview, a Participant Information Sheet (P.I.S.) (appendix 13) was supplied to all research subjects via e-mail. During the consent process, I confirmed whether the participant had reviewed the Participant Information Sheet and whether they had any questions before signing the consent form.

Written consent was obtained from all participants (appendix 14). This consent was for participation in the interview, as well as the inclusion of verbatim transcripts in the final report (Smith et al, 2009). An opportunity for face-to-face dialogue to discuss any concerns that they may have before signing the consent form is part of this informed consent process. This was part of the first contact meeting. The participant had a right to withdraw at

any time before commencement of the study with no adverse impact (Smith et al, 2009), however no participant exercised this right.

3.8.3 Interview schedule and questions

An interview schedule provides structure, promotes interaction and encourages a comprehensive description of the participants' experience, with nominal input from the researcher (Doody & Noonan, 2013. King & Horrocks, 2011. Smith et al, 2009). For this study, the interview schedule was developed (Appendix 12), informed by the literature reviewed in chapter 1. The schedule also linked to the research questions and aims, with appropriate prompts developed to ensure experiences could be explored in depth. The schedule commenced with a broad question about their experience in the ambulance service and how it feels to work in an emergency environment, allowing the participant to descriptively recall their experience to date in order to embed the idiographic approach. The relevant time-scale and their experience was determined by the individual. This broad and open approach encourages dialogue and enables the participant to feel more comfortable with the topic area and the interview process.

The interview schedule was based on three main areas. Firstly, my own personal experience of this area, with the acknowledgment that during the interviews I needed to remain open-minded and non-judgmental on discussion areas. This influenced the way questions and prompts were

constructed, following detailed discussions with supervisors about how I developed awareness of how my professional role influenced the way I asked questions. Secondly, the literature review (chapter 1) was important as it identified gaps in the current knowledge base that required further exploration. Due to the paucity of evidence in this area, it was imperative that the schedule was open and adaptable. Thirdly, the initial work around the interview questions, through peer review and self-evaluation (section 2.5) (King & Horrocks, 2011). As part of the process I ensured that the research aim and questions were prominent in my notes, enabling me to check that the phenomenon being researched remained the focus of interview.

In order to develop questions and prompts that elicit the most comprehensive responses during the interview, a variety of question types would be used to trigger a breadth of information from the participant. These differing question types (Patton, 1990) are displayed in Table 2 (overleaf), in addition to examples from the interview schedule.

Table 2. *Different styles of interview questions with examples from the interview schedule and interviews.*
Adapted from King & Horrocks (2011). p37

Type of information	**Rationale**	**Example from interview schedule**
Background/demographic	*Descriptive questions about key personal characteristics*	Tell me about your professional background…
Experience/behaviour	*Specific and overt actions that the researcher could observe if they were present at the time*	What do you do to prepare?
Opinion/values	*To reveal what the participant thinks about the topic area and how their thoughts relate to their values, goals and intentions*	What does the term 'emergency preparedness' mean to you?
Feeling	*Focus on the participants emotional experiences.*	How does that feel? What were your thoughts when that happened?
Knowledge	*Questions relating to factual information that the participant holds.*	What does the evidence-base look like?
Sensory	*Sensory aspects of an experience. What the participant saw, heard, touched, tasted or smelled in any given situation.*	Tell me what you saw and heard at that moment…

Although these classifications of questions appear well defined, the practical application is less discrete, as the interviewer responds to the participant's responses (Kings & Horrocks, 2011). However, review of these categories was particularly helpful in the planning stage of the research, to ensure that

the openness of the interview was maintained and allowing a breadth of response from the participant. In addition, agreed prompts were noted on the framework to enable clarification on certain responses or to generate further information to enable the discussion to cover the pre-determined research questions. These were invaluable to enable conversation flow and elicit further response from the participant.

Once developed, the schedule was trialled and peer-reviewed with a nursing colleague, who had some experience of working in a pre-hospital environment, in addition to paramedic colleagues who determined appropriate language use and any assumptions that I may have on this area (described in section 2.5). The schedule was also discussed with both supervisors.

Prior to ethical approval, the Ambulance Service ethical panel voiced their unease in relation to the openness and flexibility of the schedule, both of which are key features of a qualitative interview (Biggerstaff & Thompson, 2008. Streubert & Carpenter, 2011). Openness is a key attribute of an IPA interview, with the literature acknowledging that awareness is required as to whether the researcher is guiding or leading the participant through the interview (Smith et al, 2009). Flexibility is required in how the questions are phrased, the order in which they are asked and how they should lead the interaction (King & Horrocks, 2011). Reassurance was given that these key topic areas would remain unchanged, but the schedule may be *'tweaked'* for

order and key prompts following review of the first few interviews, to enable the most comprehensive response to answer the research questions.

Practically, a formal review with my supervisors and a peer-review with the local IPA group occurred after interview three. Key areas for review included looking as to whether I interrupted, asked too many questions at once, or asked leading questions. On reflection, I could see areas where I could develop my interviewing technique, such as asking one key question, rather than a long question with multiple strands, and this was modified as I progressed through the interviews. This review, after reflection using the prompts (table 2), resulted in adaptation of the schedule enabling a deeper response from the participants.

3.8.4 Interviews – the practicalities

The interviews were carried out at the participant's work place. A quiet area, away from colleagues was arranged for each interview to minimise disruption, ensure quality audio recording and allow a confidential dialogue to occur. Recruitment and data collection occurred between March and June 2014.

Demographic information, such as gender, professional role and background within the ambulance service was obtained for each participant to contextualise their experience. These demographic characteristics are summarised in Table 4 and in chapter 4. Due to the small sample size, no

further detailed demographics are provided as staff members would be identifiable and confidentiality could be breached.

On meeting the participant, in addition to obtaining consent, a brief dialogue occurred regarding the context of the study (academic qualification) and my role as a nurse researcher. In addition, informal conversation took place as an '*icebreaker*' to open dialogue and establish a researcher/participant relationship.

As the interview was nearing completion, time was given for further questions and discussion, before thanking them for their participation. I then took time, either in my car or on return to my office, to complete my research diary (see section 2.5) to write-up initial reflections on the interaction.

One interview was particularly challenging, with the verbal responses being short, uninformative and implying that the questions were patronising and the respondent was *'above'* the interview. The body language echoed this, with the participant sitting in a swivel chair, which he turned throughout the interview, with his arms crossed. Various techniques were used to address the situation, including allowing silence to *'coax'* a response (King & Horrocks, 2011) but the participant did not seem to want to disclose any further information.

In two interviews, further information was exchanged that was relevant to the study after the formal interview was completed and the dictaphone was switched off. Restarting the recording would have inhibited the conversation flow so a note of this dialogue was made within the researcher diary.

All participants were thanked via e-mail and via a card for their contribution to the study. In addition, a couple of candidates asked for a letter for their professional portfolio as evidence of engagement with this study.

3.8.5 Interview recording

Interviews were audio-recorded to enable detailed recall of data at a later point. This process was made clear within the participant information sheet and participant consent form.

Recording was made via a relatively small digital dictaphone, which was unobtrusive to minimize the affect of recording on the data obtained (Fernandez & Griffiths, 2007. Britten, 1995). The knowledge of recording or the presence of the recorder may have an impact on the participant and this was minimized using strategies such as using an interview schedule to make the session feel spontaneous, positioning the dictaphone in an unobtrusive position, and starting the recording before the formal introduction to make the follow-up dialogue feel more relaxed (King & Horrocks 2011. Fernandez & Griffiths, 2007), once consent had been gained.

Note taking during the interview was minimal as this inhibits the on-going conversational dialogue and creates a physical barrier between the researcher and the participant. Short words were noted on my interview schedule as reminders of points to come back to. Participants were informed at the beginning of the interview that I may jot down notes occasionally during the interview as a self-reminder.

The interviews were recorded and notes regarding the setting, the respondents' body language and other non-verbal communication were documented to capture the atmosphere and data in its entire context. Notes were added to the researcher diary after each interview, including non-verbal cues. On reflection, these notes are sufficient as the studies essence is the verbal dialogue from the participants, rather than their physical interaction with the researcher. The interpretative component of IPA requires that these additional interactions are included when reviewing the exchange between researcher and participant, and these were added to the transcriptions for the data analysis phase.

3.8.6 Interview transcription

Completed interviews were transcribed verbatim (Smith et al, 2009. Biggerstaff & Thompson, 2008) as soon as possible after the interview, and anonymised at this point. The detailed and accurate records of each interview are required for the data analysis stage. A semantic text of each

interview, detailing each spoken word, in addition to non-verbal cues is vital in IPA to provide the iterative detail required.

Each interview was transcribed onto a MS Word document, formatted with line numbers and wide columns to allow space for later data analysis. Symbols such as [], * and # were used to add additional comments such as laughter, significant pauses and hesitations. The act of self-transcribing allowed me to become more familiar with the data and '*hear*' the participants voice as I was typing and rereading the text, and this was the first stage of data analysis (Wagstaff & Williams, 2014. Langridge, 2007), rather than this being solely a practical process.

3.8.7 Confidentiality

The Participant Information Sheet clearly sets out what the data obtained will be used for, how this personal information is stored and who will be able to access this data in its raw format (Chief Investigator) (Moule & Goodman, 2009).

Data analysis, access and storage procedures were consistent with the ethical principles set out by NRES. Pseudonyms were assigned to each individual, and all of their personal data, to aid with confidentiality. All data was securely stored on a password-protected database (external hard drive containing transcribed interview data, plus MP3 player with raw data) and was stored in a locked cabinet, which only the researcher could access.

Supervisors were given anonymised transcripts. The participants were informed about who will have access to the data, where and how it will be stored and when and how it will be destroyed. This information was contained on their Participant Information Sheet.

Interviews were assigned a unique identifying number (Moule and Goodman 2009. Vivar et al, 2007. Walker, 2007) and formatted in a table showing role and years in their current role. Any unique identifiers in the transcript were removed. The Participant Information Sheet ensures that the participant agrees to anonymised extracts appearing in the final report. Whilst individuals will not be identified due to a code being attributed to them, the site will be evident as all respondents will be from one regional ambulance service. No identifiable information will be shared with the employee's managers and all measures were taken to ensure that the participants are not identifiable from within the final research report.

3.8.8 Interview length

Recruitment occurred between January and June 2014, with interviews occurring between March and June 2014. The table overleaf provides a summary of each interview (pseudonyms as names) and details interview length in time and words.

Participant Number	Gender	Role and health-care experience	Length of interview	Interview length (words)
Jessica	Female	Newly qualified. 6 months experience	47 mins 3 seconds	6643
David	Male	26 years experience	57 minutes 32 seconds	3939
Philip	Male	Manager. 27 years experience	1hr 12mins 8 seconds	8111
Sally	Female	HART team. 10 years experience	44 mins 9 seconds	5003
Tony	Male	HART team. 13 years experience	52 mins 17 seconds	4124
Ben	Male	Paramedic. Research Fellow. 25 years experience	1hr 17 mins 21 seconds	5943
Rob	Male	HART. 20 years experience	1hr 23 mins, 42 seconds	6907
Colin	Male	HART. 4 years experience	36 mins, 39 seconds	2294
Mary	Female	HART. 2 years experience	41 mins, 17 seconds	2721
Edward	Male	HART. 9 years experience	45 mins, 25 seconds	2424
Isla	Female	HART. 21 years experience	59 mins, 32 seconds	4455
Harry	Male	HART. 18 years experience	1 hr, 2 mins and 17 seconds	3833
James	Male	HART. 14 years experience	1hr, 37 mins and 29 seconds	11120

Table 3. *Interview length and time.*

Interviews ranged from 36 minutes and 39 seconds to 1 hour, 37 minutes and 29 seconds, with an average interview length of approximately 1 hour, 14 min. The total words from all interviews were 67,517 words and the total interview time was 16 hours, 10 minutes and 51 seconds.

3.9 Researcher involvement and the research diary

The role of a research diary, to aid with the research process, will now be explored. One method of addressing issues of reflexivity in qualitative research is by creating and recording within a research diary, a space where the researcher can reflect on their role and its impact on all stages of the research including data collection and analysis (Clancy, 2013. Clarke, 2009. Moule & Goodman, 2009. Jasper, 2005). This can be part of the data analysis process, as it can aid in substantiating the participants' experience. This internal knowledge of the subject area can be viewed as positive as it is an '*essential pre-requisite for situated understanding*' (Freshwater & Rolfe, 2001; p527), and it would be impossible to enter into researching about this topic without background knowledge as views and opinions are formed all the time, whether via our interaction with others, or via watching the television or reading press. However, only the conscious thoughts will be acknowledged and become transparent during this process, demonstrating the saying that "*we don't know what we don't know*" (Freshwater, 2005; p 312).

A research diary adds to the rigour of the process and enables the researcher to clarify their thoughts and understanding of their viewpoint. Clarke (2009) suggests that this document can be used as an aide-memoire when recalling crucial facts about each interview such as respondents' reactions, the ambience and any additional relevant facts. This document would also be a component of any transparent audit trail that is especially important in qualitative research (Houghton et al, 2013b. Ryan-Nicholls & Willis, 2009. Koch, 2006, Koch, 1994). Whilst there are clear benefits in creating a research diary, this document is only as good as the author desires it to be (Clarke, 2009). Jasper (2005) recommends noting all thoughts as the research is undertaken. The skill of reflection is commonplace in nursing and this document formalises a process that should be visible in any research project.

From a practical viewpoint, I detailed my thoughts, perceptions and reflections in my research diary during the planning, data collection and analysis and write-up process. A proforma sheet (appendix 15) was devised to record my thoughts with respect to each interview (including the initial contact with the participant, the interview setting, observation of the participant, my perception of the interview and any other relevant factors observed). These notes were especially useful during the data analysis phase, when I needed to place the participants' response and experience into context, as I found that I quickly forgot some of these small but essential parts of the interview. This resulted in themes linked directly to the participants' experience, rather than just speculation. My personal insight

on the interview are important due to the double-hermeneutic (researcher interpretation) aspect of IPA, and offers an audit trail of how my perceptions are reflected within the data analysis process.

I was able to attend a series of IPA meetings at Warwick University where my study was discussed, enabling clarity of thought process and the linking of related psychological and sociological theoretical and conceptual literature to my study. These meetings are detailed within this diary, and resulted in a spiral approach of building within this study where the participants experience is central, but my own thoughts and reflections, developed through interactions with my supervisors and the IPA group, were threaded into my data analysis and final write-up.

3.10 Data analysis

This section reviews the theoretical and methodological aspects of data analysis, followed by a description of how the obtained data was transcribed and analysed.

Data analysis aims to create *meaning* (Dibley 2011. Ellis, 2010. Boeije, 2010. Jorgensen 1989) and develop situational context (Ellis, 2010) from the potentially lengthy transcripts obtained through interpretative phenomenological interviews (Dibley, 2011. Riessman, 1993). In addition, the resultant data must address the pre-determined research questions (Boeije, 2010).

An interpretative phenomenological methodology, exploring the views of the participants, requires a data analysis method that, in addition to describing a situation, also interprets the data to increase comprehension and provide clarity, yet allowing the participant to remain central to the process through the use of direct quotations (Wagstaff & Williams, 2014. Larkin & Thompson, 2012. Pringle et al, 2011a. Backstrom & Sundin, 2007. Van der Zalm & Begrum, 2000). IPA analysis allows "*rigorous exploration of idiographic, subjective experiences and more specifically social cognitions*" (Biggerstaff & Thompson, 2008; p219). This detailed, first-person account is a distinctive characteristic of this approach.

Pringle et al (2011a, p 21) questioned *"whether it is possible to describe something without adding an interpretation at the same time?* ". In order to describe the phenomenon only, in this context, the presented data would report key characteristics of emergency preparedness. In contrast, this study aims to understand experiences and concepts in additional to defining characteristics.

However, this study specifically aims to explore how paramedics experience emergency preparedness. A conclusive list cannot be generated as each person's experience and opinion will differ dependent on numerous factors such as their past experience, area of interest and personal opinion. To generate this depth of understanding, the researcher must take a central role in interpreting and questioning the content of the interview transcripts

to generate this new knowledge (Wagstaff et al, 2014. Pringle et al 2011a. Smith et al, 2009. Biggerstaff & Thompson, 2008). As a result, a degree of subjectivity exists in the data analysis role, but can be minimised by choosing a method that has structure, is auditable and enables the researcher to justify their interpretation and thematic analysis (Pereira, 2012. Ellis, 2010. Jootun et al, 2009. Whittemore et al, 2001).

The advantages of IPA data analysis are its adaptable nature, allowing it to be used in unfamiliar situations or where the opinions of participants are challenging to obtain (Pringle et al, 2011a). In addition, it has a clear, auditable structure, which can be applied to numerous disciplines (Smith et al, 2009. Giorgi and Giorgi, 2003). Consequently, as it follows an interpretative philosophy, the generated themes can be developed as subsequent analysis occurs (Tuohy et al, 2013. Larkin & Thompson, 2012. Smith, 1999b), thus enabling an evolution of results as the study progresses. This is particularly important when examining a developing area such as emergency preparedness, as only limited literature is available to establish the interview questions. In contrast, Giorgi (2000) acknowledges that the structured nature of analysis challenges the academic freedom of the researcher, although Smith et al (2009) notes that the process is only a recommendation, and can be modified as needed.

The literature highlights that the suggested process of IPA data analysis is a guideline and commonly follows the following stages:-

- *Read transcript through several times, making notes and comments.*
- *Identify and label emerging themes and meanings within the text.*
- *Relate back and link themes to quotes in text, using a cyclical process.*
- *Look for potential links between themes that may lead to master-superordinate themes.*
- *Repeat the process with subsequent transcripts.*
- *Connect/cluster the themes from the texts into super-ordinate themes, with related subthemes.*
- *Examine texts more closely for greater depth of meaning and interpretation.*
- *Produce a summary table of theme for the group, and a detailed interpretative reflexive written account*.

Smith et al (2009) in Pringle et al (2011b), p15.

This structured approach is not definitive, and although there are communalities in approach and process, the input from the researcher must show imagination and creativity (Wagstaff et al, 2014. Larkin & Thompson, 2012. Smith et al, 2009. Eatough & Smith, 2008). Due to the interpretative freedom that this process allows, the analysis process must be transparent to the reader (Smith et al, 2009), so it is clear how the interpretations are derived and also that the narrative account remains focused at the

idiographic level, which is central to IPA, resulting in the participants quotes telling each individual story (Pringle et al, 2011a. Smith et al, 2009).

The practicalities of this process will now be reviewed in the context of this PhD. Each stage was reflected upon in my research diary and photographic evidence obtained to demonstrate how each stage was carried out, to aid with transparency and create an audit and decision trail.

Firstly, each script was read thoroughly, multiple times, to enable familiarity with the text and provide an immersive view into each interview (Wagstaff et al, 2014. Larkin et al, 2006). In transcribing each interview, I was able to '*hear*' the participant's voice which reminded me of additional aspects of each interview, which were not captured on the digital recording. In addition, the research diary, with the initial notes that were made about the interview and the interaction between the researcher and participant, was reviewed alongside each transcript. This process acted as an additional contextual reminder of the interview. This stage enabled active engagement with the data and the emphasis on each individual experience within the transcript.

Notes were then developed at an exploratory level, and initial manual coding commenced on a line-by-line basis (appendix 16). This '*open coding*' consists of identifying apparent areas of interest including language, events, places and areas of concerns (Smith et al, 2009. Larkin et al, 2006) and also considers how the participant discusses, comprehends and considers

emergency preparedness. In addition, descriptive, linguistic and conceptual concepts were highlighted and noted on the text (Smith et al, 2009) (appendix 17). At the end of this stage, a detailed and holistic review of each interview had occurred, with notes reflecting the phenomenological focus, detailing what it is like to be a participant and what some of the key features of these experiences are and what they mean to the participant. At this stage, emergent themes were noted on index cards for further review. In addition, a brief summary of each interview was added to the interview transcript, with key summary bullet points.

Moving from the descriptive to the interpretative phase required '*abstract*' thinking, with the researcher noting keywords, patterns, metaphors and imagery (Smith et al, 2009). It is at this stage that the researcher is *"trying to make sense of the participants trying to make sense of their world"* (Smith & Osborn, 2008. p53). A similar pen and paper approach was deployed, initially on one transcript, before moving to the next. To aid in the line-by-line text review, various techniques were utilised to ensure that the required detail was captured. These techniques included reading the text out loud, in small chucks (and covering up non-relevant parts), on the computer and on hard copy and also by reading the document backwards (deconstruction) (Smith et al, 2009). During this process, notes were made of metaphors and other '*gems*' that stood out that required further review and analysis. These *'gems'* are infrequent, but their value, in representing a theme, is much greater than the part of the transcript it represents (Smith, 2011c). These gems were highlighted, and used as theme titles or

descriptions, which further roots the analysis in the participant's words (Pringle et al, 2011a).

These notes were then moved from individual transcripts onto an A3 piece of paper where themes were mapped (and associated subordinate themes were developed), with the aim of patterns developing which provide an insight into each lived experience (appendix 18). It was important at this stage to establish some order and structure to how the results would be presented, so a table detailing key quotes and the theme they represented was devised.

Whilst IPA focuses on the individual account, there is also a need to note patterns across the transcripts. A table was created, from the themes/subordinate themes developed and a mapping exercise was carried out (appendix 19) noting similarities, differences and interrelations that was significant (Smith et al, 2009. Larkin & Thompson, 2012. Eatough & Smith, 2008). During this stage, additional consideration was given to the extracted quotes to ensure that they, and the developing themes, were illustrative of the participant's interview.

The process of identifying themes and subordinate themes was challenging and overwhelming and the literature notes that this can feel like '*drowning in a deep bowl of spaghetti*" (Wagstaff et al, 2014). Multiple methods of visual organizing occurred, including the use of index cards that were labelled and moved around as themes developed and disappeared, and

mind-maps to represent the concepts and themes as they moved around the central themes (Wagstaff & Williams, 2014. Whiting & Sines, 2012). Using a mind map enabled a visual structure of how the final themes were connected and structured and resulted in a visual pathway for data analysis (Whiting & Sines, 2012). Through visual mapping and discussion with supervisors, an IPA group and a nursing colleague, the final themes for discussion were determined from the initial themes. This stage of the process was reflective, iterative and cyclical (Wagstaff & Williams, 2014). Through verbal discussion it was apparent that the concluding themes had clear links to the text and were suitable for review and further discussion.

From these visual tools and table, a narrative can then be created (chapters 6, 7 and 8), with a thread created for each theme, displaying pertinent extracts of the transcript to illustrate the key points. A table summarizing key themes was developed, detailing the superordinate and subordinate themes that had been identified.

A significant decision was whether to utilise data analysis software during this phase. Although there are sound reasons for using programs such as QSR NVivo, the IPA literature supports researcher preference on this issue (Wagstaff et al, 2014). As the primary focus of IPA data analysis is actively engaging with the transcripts and coding and analysing them (Smith et al, 2009. Langridge, 2007), this was carried out with paper, pens and index cards enabling intimacy with the data, resulting in greater insight and a richness to the analysis phase.

3.11 Conclusion

This chapter has reviewed how the research was conducted, including looking at practicalities such as recruitment, access, ethics, data collection and analysis and how these methods was guided and informed by IPA. The next chapter describes each participant through the inclusion of a pen portrait, providing some context to the data findings and discussion chapters.

CHAPTER 4

The Participants

4.0 Introduction

The purpose of this chapter is to introduce the research participants in the form of pen portraits. Chapter 2 and chapter 3 described how IPA aims to give voice to individual accounts, through the use of in-depth interviews (Larkin & Thompson, 2012. Pringle et al, 2011a. Brocki & Wearden, 2006. Eatough & Smith, 2008. Larkin et al, 2006. Reid et al, 2005). These individual accounts represent the idiographic (individual) component of IPA. Pen portraits offer an understanding of each individual, enabling a contextual understanding of their experience. In addition, the inclusion of a pen portrait aims to make each individual more *"alive and present"* within the research presentation (King & Horrocks, 2011, p139).

4.1 Pen Portraits

This section includes a pen portrait for each participant. A pseudonym has been allocated to each participant, and additional identifying information withheld to promote confidentiality and anonymity.

Jessica

Jessica is a female, in her 20's. She is a newly qualified paramedic, working in this role for 5 months, after undertaking a foundation degree in paramedical science. She has no clinical experience of dealing with a mass

casualty incident, however she has undertaken some training in this area as part of her pre-qualification training.

David

David is a male, in his late 40's. He is an experienced paramedic, working in pre-hospital care for 26 years and entered the profession through the role of a patient transport services responder. He has worked as a paramedic, advanced paramedic and rapid solo response. He has undertaken mass casualty training in the past, but not within the last few years. He has attended motor vehicle collisions, involving multiple vehicles and services. However, he has never attended a 'big-bang' major incident.

Philip

Philip is a male, in his late 50's. He is an experienced paramedic of 27 years. He has taken on the lead role for emergency preparedness. He is actively involved in training, education and management of emergency preparedness within this region. He has dealt with multiple major incidents throughout his career.

Sally

Sally is female and in her 20's. She achieved her advanced paramedic qualification and joined the HART team in 2012. She is enthusiastic about emergency care and loves the environment that she works in.

Tony

Tony is male and in his 30's. He joined the ambulance service as a cadet in the late 1990's and completed his paramedic training in 2001. Since then he has worked on-the-road, before becoming a specialist in clinical decontamination in 2004. In 2010, he joined the HART team and has worked as a responding paramedic, before moving through the ranks as team leader and now a support manager. He believes in emergency preparedness as a speciality and that evidence-base is important in this area.

Ben

Ben is a male in his early 40's. He is keen on self-development and would welcome additional practical training in this area to complement his theoretical and political knowledge.

Rob

In his late 30's, Rob joined the HART team for the physical challenge, which reflects his passion for adventure sports. He is experienced in dealing with mass casualty and unexpected events and takes a pragmatic but mature approach to working in this speciality.

Colin

Since being a teenager, Colin aspired to work as a paramedic for the physical challenge and diversity of work. He has worked as part of the HART team since 2012.

Mary

Mary has been a paramedic for 3 and a half years, and recently joined HART (4 months membership). She entered the ambulance service through the traditional route, starting as a technician, undertaking the driving course and then completing her 9 months paramedic training. She moved to the HART team 4 months ago as she was ready for a new challenge and enjoys the outside and sporty aspect of the role (having previously worked as a lifeguard and gym instructor). Being a new HART team member she is currently undergoing numerous training programmes for her new role.

Edward

After joining the ambulance service in 2002 as a technician, Edward progressed to a paramedic in 2005. Looking for a new challenge and a test of his skills, he joined the HART team 8 months ago and is settling into his new role.

Isla

Isla has been a paramedic for 17 years, since the age of 21. Since joining the service as a cadet and progressing through the ranks to technician, paramedic and then advanced paramedic she has amassed a large knowledge of clinical experience but has never experienced a mass casualty incident. She joined HART 6 months ago, looking for a new challenge as she felt the day-to-day work was 'run of the mill' and she did not want to go into a management position.

Harry

An experienced paramedic, Harry joined the HART team in 2008. He has worked within the ambulance service since 1989, when he joined the Patient Transport Service and has worked at various ambulance stations within the region.

James

James joined the ambulance service in 2000 as a technician, after deciding he wanted to work in a practical, rather than academic environment. He is 'sports mad' and had hoped to pursue a sports based career until he was injured. He progressed to being a paramedic in 2004 and joined the HART team at its inception in 2008, with a special interest in Urban Search and Rescue.

4.2 Summary of the participants' demographics and interview information

The table overleaf summarises information on each participant, alongside the interview date.

Participant Number	Date of interview	Gender	Extent of paramedic experience
Jessica	12/03/14	Female	Newly qualified. 6 months experience
David	20/03/14	Male	26 years experience
Philip	21/03/14	Male	Manager. 27 years experience
Sally	14/05/14	Female	HART team. 10 years experience
Tony	14/05/14	Male	HART team. 13 years experience
Ben	22/05/14	Male	Paramedic. Research Fellow. 25 years experience
Rob	23/05/14	Male	HART team. 20 years experience
Colin	23/05/14	Male	HART team. 4 years experience
Mary	23/05/14	Female	HART team. 2 years experience
Edward	23/05/14	Male	HART team. 9 years experience
Isla	23/05/14	Female	HART team. 21 years experience
Harry	30/05/14	Male	HART team. 18 years experience
James	17/06/14	Male	HART team. 14 years experience

Table 4. *Summary of the participant's demographics and the interview date.*

4.3 Summary

This section has presented the participants as pen portraits, reflecting the idiographic nature of IPA. In addition, key interview information has been included. In the next chapter a description of how the research analysis and discussion will be presented, reflecting the chosen methodological approach of IPA.

Chapter 5

Presentation of IPA themes

5.0 Introduction

This chapter details how the data analysis, commentary and related discussion will be presented. This presentation reflects the underlying IPA methodology and as a result of this, specific IPA terminology is defined and clarified. In addition, the study's aims and objectives will be reviewed and the initial presentation of the themes and sub-themes will be presented before an in-depth exploration and discussion of each separate theme in chapters 6 – 9.

5.1 Reporting structure for results

As a result of the data analysis process detailed in chapter 3 (section 3.10), emerging themes have been generated on the concept of emergency preparedness as experienced by this sample. These emerging overarching themes, termed *'superordinate'* themes within IPA, are allocated a descriptive label detailing the conceptual essence of the themes contained within it (Pietkiewicz & Smith, 2012). Within each 'superordinate theme' is a *'subordinate'* and related *'subtheme'* category that offers further insight and connection to the overarching superordinate theme.

Each data analysis chapter focuses on a singular superordinate theme and contains detailed analysis of its subordinate and subthemes, in relation to experiences of emergency preparedness. Descriptive details of the focused themes are set out in each introductory paragraph, along with any relevant context and definitions. A diagram, visualizing the related superordinate and subthemes, follows the superordinate theme introduction and a table containing a key quotes to represent each subtheme is then presented.

The use of participants quotes are visible throughout the data analysis chapters and reflect the central role that the participant has within an IPA methodology. Including quotes within the data analysis chapters enables the participant to be visible, after being heard audibly and preserves their views (Willig, 2008). In addition, it offers transparency as to the root of the researcher's interpretation and enables the reader to review the data trail from the interview through to the interpretation and creation of these emerging themes (Pietkiewicz & Smith, 2012). Although direct quotes are included within these data analysis chapters, it is also important to preserve the non-verbal aspects of the interview (Shinebourne, 2011). Where these were present and add to the discussion, they have been included as additional notations.

Each subtheme contains a minimum of 3 quotes, as suggested by Smith (2011a) when the sample size is greater than 8 participants in an IPA study. These quotes are labelled with the participants' pseudonym to maintain anonymity. The selected quotes represent the subtheme (and in turn the

subordinate and superordinate theme) and demonstrate an *"indication of convergence and divergence, representativeness and variability"* (Smith 2011c, p24). These convergences and divergences are noted within the data analysis chapters, in addition to a more detailed discussion in chapter 9, where patterns are noted and discussed further, highlighting both the similarity and uniqueness of the paramedics experience.

The use of quotes and metaphors, as stated directly by the research participants, are used as theme descriptors in IPA (Pringle et al, 2011a). Additional descriptions involving imagery, patterns in language and communication are also included in the interpretative analysis. This is an aspect of the in-depth analysis and in addition, it ensures that the descriptions are directly connected to the participants' quotations (Pringle et al, 2011a. Smith et al 2009).

Reflecting on the human lived experience, IPA analysis incorporates the idiographic (individual research participant) stance, alongside the double-hermeneutic interpretation of the researcher. This double-hermeneutic interpretation, where the researcher is "*trying to make sense of the participants trying to make sense of their experience"* (Smith, 2011) is a visible narrative within each section of the data analysis, resulting in an idiographic interpretative discussion (Willig, 2008), rather than a descriptive account of the quotations (Smith, 2011c). This method demonstrates how the quotations are contributing to the emerged themes.

Detailed interpretative analysis occurs for each subordinate theme, concluding with a summary table.

After presentation of the data analysis chapters (chapters 6, 7 and 8), a chapter summarising the results is included (chapter 9). Chapter 10 then offers a discussion of relevant literature and theory related to the themes and their application to emergency preparedness. These discussed themes and related concepts and theory will contribute to the development of a conceptual model, in addition to theoretical and practical implications of this study.

5.2 Aims and objectives – a review

Prior to presenting the initial emerging themes from the data analysis, the aims and objectives of the study are included at this point for review.

The research aim is:-

- To develop an understanding of the concept of emergency preparedness, through the experiences of paramedics.

The research objectives are:-

- What are the experiences, in their role as individual paramedics, of emergency preparedness?

- What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?
- What knowledge and evidence do paramedics draw on to inform their emergency preparedness clinical practice?

The understanding of how these paramedics, as individuals, experience emergency preparedness as a concept is central to this study. These research aims and objectives will be returned to in the summary of the analysis and discussion in Chapter 10.

5.3 Emergent superordinate themes

Through IPA methodology, with the ideal target sample group, three emerging superordinate themes were identified that can contribute to an understanding of the concept of emergency preparedness, in relation to the research aims and objectives.

The three superordinate themes to be explored in chapters 6 – 8 are:

- Self Determination
- Control
- Experience-Based Practice

Figure 7 displays the summary of IPA themes, and presents the subordinate and subcategories of each superordinate theme.

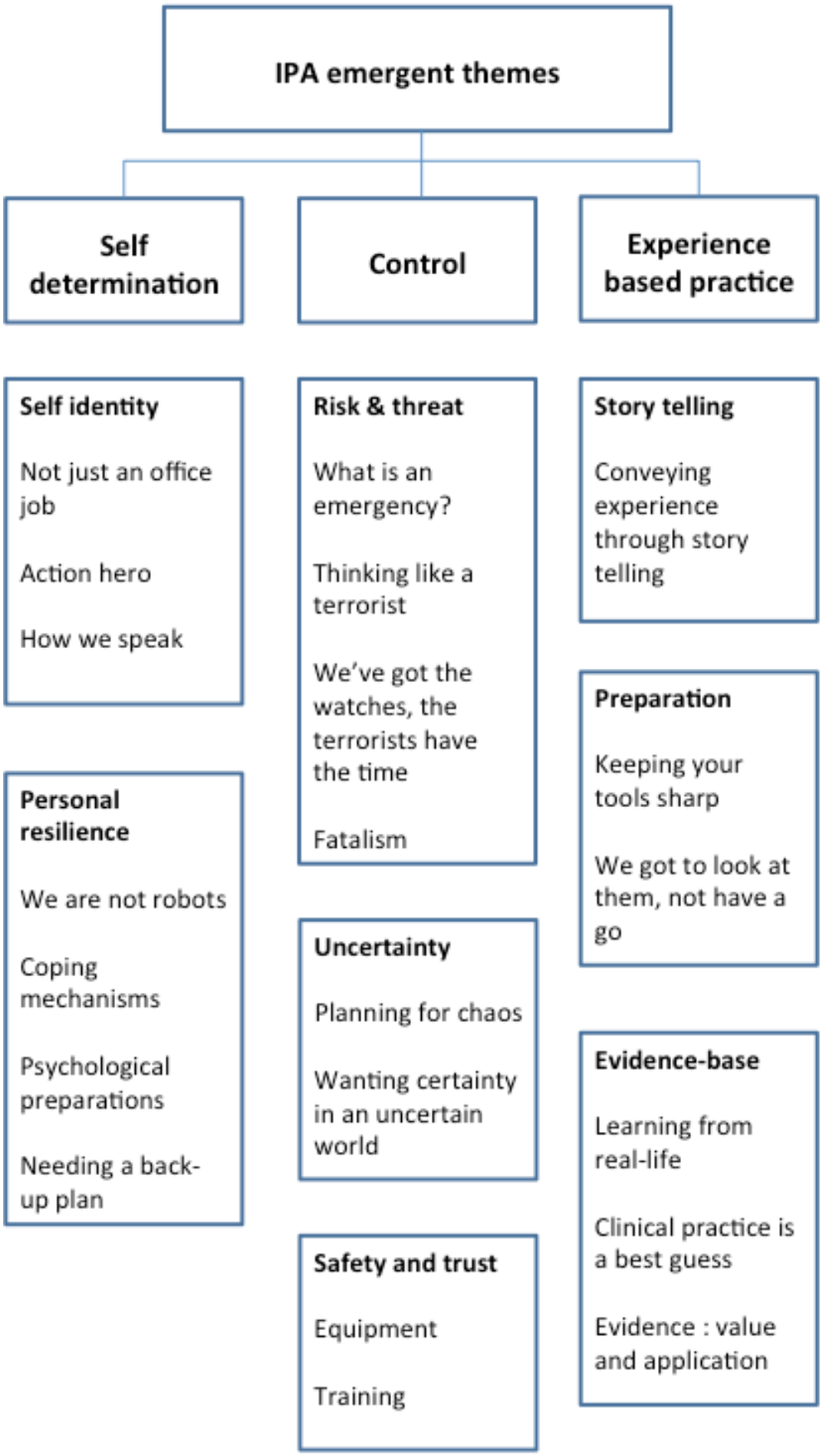

Figure 7. *Summary of IPA emergent themes.*

5.4 Summary

This chapter reviewed how IPA influences the presentation of this study and describes the presentation and discussion of data in chapter 6 – 10. The importance of the individual voice being visible within the data analysis process is highlighted and is a strength of IPA. Explanation of IPA terms used within this thesis occurred and the research study's aims and objectives presented. Three main superordinate themes; Self Determination, Control and Experience-based Practice were identified through the data analysis process. Chapters 6 – 8 explores, in detail, each of these themes (and related subordinate and subthemes), with the use of the participants' quotes.

CHAPTER 6

Findings: Self Determination

6.0 Introduction

Within the context of this study, the superordinate theme '**self-determination**' emerged, particularly in relation to self-motivation and resilience. Self-determination theory provides an insight into individual characteristics that impact on self-motivation and psychological resilience (Bartholomew et al, 2011. Deci & Ryan, 1985. Ryan & Deci, 2002) and offers a *"perspective on human motivation and personality that focuses on the social environmental conditions that enhance self motivation and healthy psychological adjustment"* (Bartholomew et al, 2011; p1459).

This concept will be discussed within the context of the paramedic's experience. Firstly, detailing the importance and impact of the individual's role perception and working culture on their motivation to work in this unpredictable environment, presented as 'self-identity'. Secondly, the concept of **personal resilience** acknowledges the psychological aspect of functioning, at a personal level, within unexpected, potentially overwhelming incidents, presented as 'personal resilience'.

All thirteen participants contribute to this category and there are eleven participant accounts reported in this chapter.

The subordinate and subthemes are summarised in figure 8, and then further detail is included in table 5, following IPA guidelines, which recommend this as the most appropriate way to present the data (Smith et al, 2009) (see chapter 5). Following this is a discussion of each theme, supported with extracts from participant's quotes, ensuring that the subject discussion is rooted in the individual's experience.

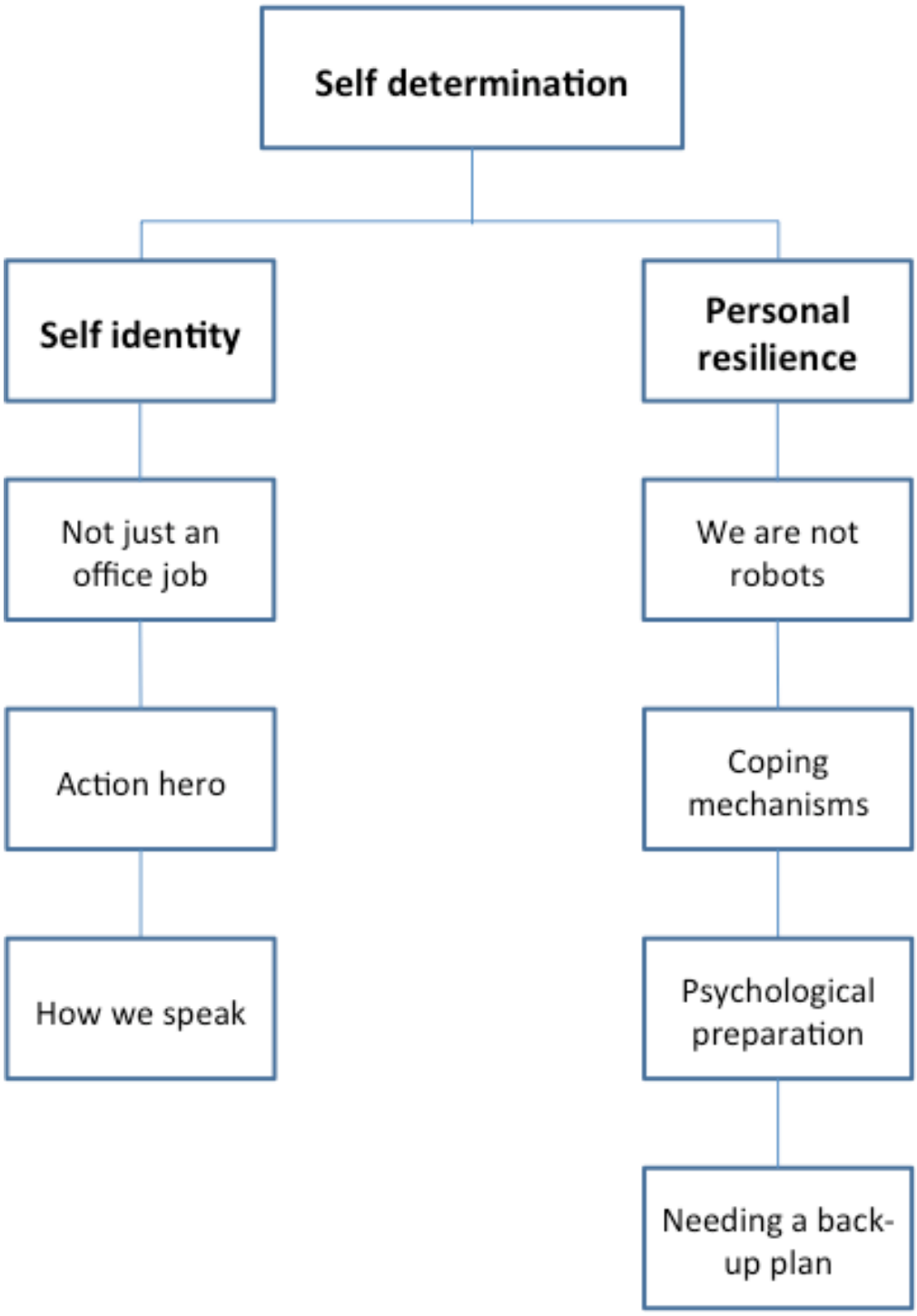

Figure 8. *Findings: self determination and related subordinate and subthemes.*

Table 5. Subordinate and subthemes for the superordinate theme 'Self Determination'.

N.B. Each theme is presented in detail in subsequent sections

Subordinate theme	**Sub categories of themes**	**Verbatim quote from transcript**
6.1 Self Identity	**Not just an office job** **(6.1.1)**	*" I like the fact that you go to work not knowing what you're going to get. Yeah, I don't know, there is just some-thing nice about the fact that you don't come to work 9 – 5 and sit down at a desk all day for 8 hours and then you have to sit in rush hour to get home. It's just nice having that unpredictability, and variety and difference".* Jessica. L28 – 34.
	Action hero **(6.1.2)**	*"People who are after a new challenge, like me really, coming from a paramedic I wanted to do some-thing different, the opportunity to treat a casualty in a dangerous, challenging environment. I think you need to be up for that challenge and physically fit as well, as it is a physically demanding job so you need to keep your fitness up".* Mary. L259 – 264.
	How we speak **(6.1.3)**	*"Procedures, SOP in place for us to deal with any major incident as an ambulance service working with the fire service and the police".* Mary. L13 – 15. *SOP = Standard Operating Procedure*
6.2 Personal Resilience	**We are not robots** **(6.2.1)**	*"I imagine, if the day comes and you deal with some-thing like that, and you are one of the crews that turns up and are first in on 7/7 in London, even the most cold-hearted*

		clinical person in the world, it would be likely that they would have some kind of feeling towards that, emotion towards that so it is going to be difficult. People aren't going to be robots in doing it". James. L415 – 421.
	Coping mechanisms (6.2.2)	*"some people do it better than others and my wife thinks I've got no emotion at all [laughs]… Is it a coping mechanism or me being in the ambulance service or is it the reason that I'm in the ambulance service [laughs]? I would suggest that it is probably a little bit of both. I'm not particularly sympathetic unless some-one warrants my sympathy".* James. L399 – 403.
	Psychological preparation (6.2.3)	*"I don't think any-thing could prepare me for that to be honest I mean, even when you simulate it, it's hard as it is not real so you can't, it is more the emotion of things than the actual doing. Especially with youngsters, you have a bit more of an emotional bond with them, especially if they are crying for you and things like that, it is a lot harder to walk away for any-one I would imagine, than to walk away from an adult but you can't train properly for that, because you don't know how you are going to feel, you just don't and we never had to do it".* Isla. L456 – 466.
	Needing a back-up plan (6.2.4)	*"it is going to happen you know and we have just got to deal with it whereas perhaps it will affect me later on, it wouldn't affect me… or I feel that it wouldn't affect me too much at that time and as I say I have not dealt with it, I don't know what it is going to be like in the future or*

		any-thing like that so I would be hopeful that there would be a back up sort of plan for us, if you know what I mean, to sort us out after". Harry. L128 – 136.

6.1 Self Identity

Self-identity refers to *"how people define themselves in relation to others"* (Johnson & Lord, 2010, p 681) and includes factors such as impact of identity on personal functioning, group interaction and self-motivation (DeCreamer & Tyler, 2005). It is this definition that will be applied to the participant's lived experience and perceptions of their professional role, how others perceive their role as a *'blue-light'* emergency responder and how they conceptualise their professional identity in the context of emergency preparedness. It also considers how the paramedic's choice of language reflects their role characteristics.

Three subcategories of this theme were noted under this subordinate theme and each will be considered in the following section:

- Not just an office job
- Action hero
- How we speak

6.1.1 Not just an office job

> *"I've never really wanted an office job, that doesn't suit me at all. I like the fact that even if you have a common theme there are a lot of jobs, every job is different; every day at work is different".* Jessica, L21 – 24.

The paramedics reflected on their professional role and nature of their work, offering a context for their emergency preparedness experience. A number of specific differences in their paramedic role were noted when compared to a more '*routine job*'. These included the diversity and unpredictability of their workload, the unsociable hours and their interaction with the general public.

Jessica, a newly qualified paramedic, noted that a conventional job would not suit her, suggesting that she thrives on the diversity of the workload:

> *"everyone of those calls is still different in its own way and I like the fact that you go to work not knowing what you're going to get. Yeah, I don't know, there is just some-thing nice about the fact that you don't come to work 9 – 5 and sit down at a desk all day for 8 hours and then you have to sit in rush hour to get home. It's just nice having that unpredictability, and variety and difference. ".* Jessica, L28 – 34.

There is a sense that working in the emergency services has a physical and exciting element to it, in contrast to office work that is perceived as being mundane and structured. Not knowing what the day is going to entail appeared significant to each participant, perhaps reflecting a personality type that appreciates this unpredictability.

The working environment appeared significant to all thirteen participants, with the suggestion that the pre-hospital environment (defined as out of the hospital) and the presenting clinical situation was often challenging, both physically and psychologically, and often unknown until they arrived at the scene. It was apparent that these individuals valued the personal mental and physical demands of working in this setting. Colin, who is a HART paramedic, describes this challenging environment as a positive, motivating feature. He also implies that there is another aspect to his role, beyond the physical clinical skill of treating a casualty:

> *"I didn't feel that there was a challenge any-more for me on the road so I liked the idea of being involved in scenarios that tested me and my clinical abilities in more taxing situations. So I thought, the opportunity to be treating a patient for 2 – 3 hours in a testing environment with difficult extrications. And to be part of a team, rather than working on your own would be a good experience".* Colin, L26 – 33.

These paramedics appear to perceive their role as exhilarating in contrast to a *'regular'* job. The unpredictability, diversity, outside environment and unknown element of their work appear as a motivator, rather than a barrier to engagement, and offers a wider context of their experience. A discussion on how the characteristics of role diversity, work unpredictability and the physical dimension and environment of work may influence the development of training,

educational and psychological preparation will be explored in chapter 10 (p294).

6.1.2 Action hero

The *'action hero'* sub-theme includes numerous elements, which will be discussed further in this section.

Participants identified their role as being action-packed and adventurous, which often complemented their personal passion for adventure sports and outdoor pursuits:

> *"his [managers] direct quote to me was "do you realise if you get into the ambulance service, that you will not be swinging off lines and swimming through rivers"? My gut instinct to that was disappointment, however I did know that and I told him that those were my interests but this will be my job and the two don't necessarily stop each other from happening… I like being in those environments so for me to transpose my paramedic skills into those environments is a fairly natural progression, that is what really pushed me into doing it".* James, L498 – 513.

The overlap between their personal hobby and applying these skills at work was a common theme. Another element identified within the transcripts was the belief that their personal fitness could enhance their professional role. The image of a paramedic '*swinging through trees*', as suggested by James, represents a television action-hero and perhaps does not reflect the day-to-day nature of the job. Interestingly, the realities of the role are acknowledged by the participants, however they

still indicate, within the transcripts, that they will have the opportunity to be an *'action hero'*, displaying a divide between reality and their imagination, potentially enabling these paramedics to approach real situations with a lack of normal expectations.

Mary, who worked as a lifeguard and gym instructor before joining the ambulance service, associates the need for an advanced level of physical fitness with the potential of a hazardous and demanding work environment:

> *"People who are after a new challenge like me really, coming from a paramedic, I wanted some-thing different, to treat a casualty in a dangerous, challenging environment. I think you need to be up for that challenge and physically fit as well, as it is a physically demanding job so you need to keep your fitness up".* Mary, L259 – 264.

It is understandable why a basic level of fitness is required to carry out their role, and a personal fitness assessment is part of the initial paramedic recruitment process (WMAS, 2015). Paramedics identified themselves through this '*action hero*' lens and this appeared to influence their attitude to their role and expectations of the type of incidents that they were expected to respond to. Additionally, they appeared to perceive the physical aspect of their role as a key enabler in being prepared to respond.

There was a sense amongst the paramedics that their working environment was exhilarating. This extract demonstrates this, with a focus on the *'buzz'* that the practitioner experiences, when responding to an urgent situation:

> *"the excitement. Excitement. The adrenaline rush, the knowledge that you can be involved in this world, and you could make that little difference".* Sally, L276 – 279.

This *'action hero'* concept was evident from the majority of paramedics interviewed. Two divergent and conflicting accounts emerged from Isla and Edward who offer a more measured view on the day-to-day role. Isla suggested an element of excitement, interspersed between waiting for an incident and the routine work of the ambulance service. This extract from Isla, also suggests how the general public perceives the paramedic role:

> *"It is just the day to day, normal run of the mill thing. It hits you a little bit sometimes when people say what do you do and I say I'm a Hazardous Response Paramedic and they say oh, ooh... but the day to day, they don't see the day to day, they don't see the run of the mill things, but day to day we just do run of the mill things, just waiting [emphasized], in case…".* Isla, L66 – 73.

Edward and Isla are experienced paramedics, who have each worked in the service for over twelve years. Their differing opinion may reflect their experience on the job, in contrast to the more junior members of staff who were interviewed for this study.

> *"I think the longer that you have been in the service and have seen lots of incidents you, how do I put it, let me think…. you become a bit more realistic about what you can and can't do. It is knowing your capabilities. You are not going to be a superhero. No-one is and it is about knowing your capabilities".* Edward, L162 – 167.

Sally, in her account, gave an example of her mother's perception of her role. This offers an insight into the family member's role perception.

> *"my Mum imagines that I am running into terrorism, like the London bombings every day. I don't think she quite gets what we do [laughs]".* Sally, L316 – 318.

As Sally's Mum believes her role to be an *'action hero'*, it may create some anxiety and safety worries within this mother-daughter relationship and be a potential barrier to preparedness. This awareness of relationship anxiety was evident in numerous transcripts, and may be increased compared to when a family member is working in a '*regular role*', such as in an office job (see section 6.1.1).

When discussing the difference between the paramedic role and other professional roles, Sally then suggests that it is the training and resultant skills that distinguishes them from other workers, and they are just 'regular' people, who are educated to undertake a specific role, as opposed to paramedics being *"super-human".*

> *{how are you perceived?} "I think with a bit of awe some-times and some of them* [family members] *think that we are super-human. We are not, we are just normal people who have been trained completely differently to how most people are".* Sally, L327 – 330.

The general public (and these relations) may gain their understanding of the role from personal experience, such as a sick relative or through the media (for example, the news or from fictional medical dramas). From the participant's accounts, it is apparent that there is a disconnect between the public perception of excitement and the reality of their day-to-day job, which appears to involve training and waiting for an incident. This contrasting viewpoint will be discussed further in the discussion chapter (p294)

Not all respondents wished for excitement and action. One participant, Isla, who has been a paramedic for seventeen years, noted that she saw her role as a job, and acknowledged that other individuals were trained and equally able to respond if an incident occurred. She has no desire to put herself into a dangerous situation unnecessarily. When asked how she felt watching a mass casualty event on television, she responded by stating:

> *"to be honest, I don't wish I was there. I am quite happy to watch and learn, if I had to be there I would, as that is my job and I have no issues with that but to sort of make myself there all the time I don't think so, no I've got a family and stuff to look after so to put yourself into more situations then you need to be in I probably wouldn't as there are people trained every-where to deal with this so that is what we are trained for, to deal with it".* Isla, L236- 244.

This may be reflective of her age and experience within the ambulance service, in addition to the consideration of her family at home. This is in contrast to some of the paramedics who are new to this field, with limited experience and exposure to these types of events and who do not have family dependants at home. How family members and the individual's personal life impact on role perception, as a wider contextual issue, may be an additional influencing theme connected to this subtheme. The action-hero concept and the need for an individual challenge appeared to influence the individual's motivation to engage with this area and will be discussed further in chapter 10.

6.1.3 How we speak

The language used by participants included very specific descriptions and abbreviations. For example, terminology such as:- '*SOP*' (standard operating procedure), '*BA*' (breathing apparatus) and '*PPE*'(personal protective equipment), were frequently noted throughout the transcripts. The review of language offers an insight into the 'culture' of the paramedics' experience, which is often from a military or operational background.

This first extract, from Mary, contains an example of an abbreviation used:

> *"Procedures, SOP in place for us to deal with any major incident as an ambulance service working with the fire service and the police".* Mary. L13 – 15.
>
> SOP:- Standard Operating Procedure

Abbreviations are visible in all transcripts and appear as part of their cultural language. All participants discussed standard operating procedures and guideline based practice. As they recited their operating procedures, it appeared that they were reciting and following a *'recipe'*, in a direct manner, without consideration of external factors. The next quote from Sally offers an insight as to the historical roots of this functional language, which is direct and uses many abbreviations. The influence of the military, both in terms of staff crossover and working conditions is evident within the transcripts.

> *"you can see the people who have been in HART a long time and the people who are ex-military. We have a lot of ex-military here. You can definitely tell who has done what and has what background and who has what experience".* Sally, L414 – 420.

Many of the terms used are of military origin and presumably this style of dialogue is quick to communicate and easy to understand, especially via radio communication systems, in a combat role. In this next extract, Philip also uses functional and direct language, in addition to using an acronym.

> *"We're addressing that with JESIP. We're bringing in a decision making model, which is similar to the police national model so we can undertake a rapid assessment of what's going on, based on what equipment we need, what we've got and how we are going to deliver a function in the disruptive challenge".* Philip. L55 – 61.

JESIP:- Joint Emergency Services Interoperability Programme

This language is direct, focused and is formatted in such a way that it could appear in a training manual. Phrases used by the participants often appeared as direct quotations from training manuals, guidance and policy. This was common throughout these interviews, possibly highlighting how these individuals work and process their presented information. This use of language may influence individual emergency preparedness as it reflects individual experience, professional context and culture.

In addition to the functional language, the use of humour was prominent within the transcripts. One possible reason for this could be using humour as a coping mechanism for dealing with the anticipatory response and actual response to incidents. This is also noted with the personal resilience theme (6.2).

Sally offers an insight into the use of humour in this culture when she states:

> *"I think that understanding the ambulance service as a whole is quite a mickey taking atmosphere and I think that's how people get through the day-to-day in this job".* Sally, L 23 – 27.

The emphasis on 'getting through the day-to-day job' implies that there are psychological challenges involved within the paramedic role, and suggests a survival mode within their professional role.

Together these results provide an important insight into how paramedics work in the culture of the ambulance service. The use of functional and military language is present in all transcripts. These areas are related to additional concepts such as decision-making (in relation to military language and standard operating procedures) and coping mechanisms (the use of humour).

6.1.4 Summary of the subordinate theme: Self Identity

This theme provided the context for considering a range of experiences, including a number of interrelated components such as the impact of their individual and family role perception on their motivation to work in this area. It also offers a context for how past experience and language may enable individual preparedness, within the context of 'self identity'.

Participants describe how their role is different from other more predictable jobs. They see themselves working in a diverse, challenging and unpredictable environment.

For some, it appears that their identity of being an '*action hero*' is important to them, possibly due to external perceptions and self-worth. It may also give them confidence when entering an unknown situation in the field. It is not known if this 'action hero' perception is promoted as an element of their training.

Language, as a carrier of culture, appears distinctive within this work group, with many abbreviations and military terms, perhaps reflecting the roots of the profession and the need for concise but accurate communication. As an outsider, this felt detached from everyday communication. However, it appears a familiar way of talking for these individuals. Humour, as a method of coping with their day-to-day work, was reflected within their quotes. This perhaps reflects their working culture, the nature of their role, and some of the underlying anxiety associated within it.

6.2 Personal Resilience

This section explores the concept of personal resilience. Resilience is defined as *"… the finding that some individuals have a relatively good psychological outcome despite suffering risk experiences"* (Rutter, 2007. p205). In the context of this analysis, it examines how the individual copes when anticipating their experience of an incident, responding to an incident and potentially recovers psychologically after the experience of an incident.

Within the subordinate theme *'personal resilience'*, four sub categories were identified:

- We are not robots
- Coping mechanisms
- Psychological preparation
- Needing a back-up plan

This section concludes by highlighting how each of these categories relates to personal resilience and how these may impact on the concept of emergency preparedness.

6.2.1 We are not robots

The participants discussed the need to separate and distinguish between the physical and psychological aspect of the role when actively engaging in a mass casualty incident. James highlights this in the following extract:

> *"I imagine, if the day comes and you deal with some-thing like that, and you are one of the crews that turns up and are first in on 7/7 in London, even the most cold-hearted clinical person in the world, it would be likely that they would have some kind of feeling towards that, emotion towards that so it is going to be difficult. People aren't going to be robots in doing it".* James, L415 -421.

James suggests that even with all the training and experience that each paramedic undertakes, if you were called upon to attend such an event it would not be possible to be a *'robot'* and carry out automated clinical skills without some emotional impact. Although some preparation is in place for the skill side of this role, it is unclear about the psychological dimensions pre, during and post event and how the individual would deal with this emotional impact.

Sally also discussed the separation of the physical and emotional aspects of the role, implying that to function in such an environment you would have to be automated to deal with the situation.

> *"you almost have to dehumanize the patients to deal with twenty, which some people don't like either".* Sally, L412 – 413.

This *'dehumanisation'* could be a coping mechanism. The implications of this for paramedic preparation and response are unclear. However, from the transcripts, it appears this is an individual, involuntary coping response rather than a taught or group mechanism. It is also unclear from the interviews if this dehumanisation is only necessary in a mass casualty incident when dealing with an overwhelming number of casualties or if this is necessary in their day-to-day role when faced with a single casualty at a time.

The participants also noted additional aspects of emergency preparedness, commonly separating them into the domains of psychological and practical preparation and suggested varying approaches to decoupling emotions from the physical reality.

> *"How would I cope with that? Mentally? Can I remember the protocols? Practically? That's another thing. If it is not endorsed with protocols, if it continuously reminded to you in weekly bulletins or through training and it is not active then it tends to be put in the back of your head really until you may need it. I suppose psychologically you think it could never happen but it will happen one day".* David, L270 – 283.

David acknowledges that emergency preparedness has multiple components including physical skills, with protocols to draw information from. He recognises the psychological component of the role and notes that the protocol led approach, used for clinical skills, does not apply itself to the emotional resilience aspect of the role. He also acknowledges the reality of responding to such an incident, declaring that *"it will happen"*, which may be viewed as part of the intrinsic psychological preparation of an individual.

Each paramedic has unique experiences, both professionally and personally, and these are reflected in their individualised response and requirements for psychological support in this role. Jessica highlights how seeking personalised, psychological support can be challenging:

> *"I think it depends on the person, like, I mean I think it takes a lot for a paramedic to go "I want help or I need help".* Jessica, L600 – 602.

Paramedics are often seen as physical workers, with the presumption that they are expected to deal with what they see as part of their job and the psychological dimension may not be considered. This quote offers an insight into this role perception, as there is an expectation that they will not ask for help if required. This barrier to asking for help may be a reflection of the culture of the ambulance service, with its links to the military service (section 6.1.3).

There appears to be a lack of acknowledgment in the literature review of the important emotional component of preparedness and how these paramedics are often required to separate their physical and psychological responses when dealing with a major incident. Also there is a lack of awareness of the long-term impact that this has on these individuals. Rob explains this in the following extract:

> *"it is some-thing that you don't know if people are going to have, and I know it could be some-thing pretty simple to set that off. It is not necessarily something big, it could be a similar call from years ago but all of a sudden it all comes back. I think a lot of us can deal with the right now. We can get stuck in and be task focused and do our jobs, which is easy to deal with but once you sit back and reflect, that is where the problems come. It would probably take a much better psychologist than me [laughs] to figure out what the best way of dealing with this is and how to help people. I don't think that people are prepared for it initially and for the experience that they have afterwards".* Rob, L226 – 239.

Rob discussed a possible form of post-traumatic stress disorder and how difficult this is to recognise. He acknowledged that these individuals, as paramedics, are not automated robots and what they experience does impact them psychologically. Post-traumatic stress disorder is often discussed in the context of military personnel returning from a combat zone or a member of the general public who has been exposed to an emotionally distressing occurrence. However, these paramedics suggested, because of the emotional element of the role, that this is an area that needs further exploration and individual support. Rob also details that the job is viewed as task orientated and that often, psychological issues are not recognised until after an event when there is time to sit back and reflect. He also implies that psychological preparation needs to be continuous, pre, during and post event to provide the optimum support for the individual paramedic.

This section has reviewed how paramedics acknowledge the physical and psychological dimensions of emergency preparedness and response, detailing varying approaches to decoupling the individual emotions from the physical experience. Additionally, there appears to be a lack of acknowledgement of the emotional components of preparedness in the literature, even though these appear important to the individual. This will be discussed further in chapter 10. The next section reviews coping strategies to deal with the psychological element of their role, within an emergency preparedness context.

6.2.2. Coping mechanisms

All the participants addressed the importance of coping mechanisms and the skills needed to cope with a mass casualty situation, even if they had never been exposed to one.

James implies that certain personalities are attracted to the paramedic role and that as individuals, you are required to have coping mechanisms to deal with the emotional exposure that the job involves. He suggests a *'chicken and egg'* approach to this, debating whether you learn to cope with what you are exposed to or whether you have those inbuilt skills and they attract you to the role:

> *"and part of that is, are you in the profession because you can cope and are you the type of person that can cope with it or have you got that personality because of what you have been exposed to? It is probably a little bit of both. There are not many jobs that have bothered me in terms of sleepless nights".* James, L407 – 413.

The image of not having sleepless nights suggests that James has a protective box around him, and he does not allow his work to penetrate through into his private world. This may be a form of innate resilience, indicating a coping capacity that may not be present in his colleagues. The potential long-term impact of drawing on personal resilience is discussed in chapter 10.

Using humour as a coping mechanism is a common theme in all transcripts. Jessica notes that there are certain characteristics, for example using dark humour in relation to her role and the cases that she encounters, that non-paramedics would not understand:

> *"I don't always think it is relatively easy for friends or family to understand unless they are in the service, they just don't get it or they don't have your sense of really sick, dark humour that your colleagues have [laughs] so you have to laugh sometimes…. things like your dark sense of humour as a paramedic can get you into trouble with normal, everyday people with some of the comments".* Jessica, L587 – 594.

James reiterates Jessica's suggestion of a divide between health-care workers and the general public and other professionals, and also suggests the use of humour as a way of coping with the role, perhaps as a form of emotional detachment.

> *"{sieve and sort triage}… it's a human nature thing. Unless you get robots to do it, some people do it better than others and my wife thinks I've got no emotion at all [laughs]… Is it a coping mechanism for me being in the ambulance service or is it the reason that I'm in the ambulance service? [laughs] I would suggest that it is probably a little bit of both. I'm not particularly sympathetic unless some-one warrants my sympathy".* James, L393 – 403.

He proposes that an issue that justifies sympathy from a paramedic is probably very different to what earns sympathy from a layperson, possibly due to the constant severity of injures that these paramedics see, alongside the inappropriate calls that they are called out to. James suggests that he is seen as having no emotion and having a hardened

personality, when in fact it appears that he separates emotion from his role as a self-protective mechanism. This may occur as a purposeful or a natural coping mechanism and it is unclear if this is from years of working in this environment or if this is a characteristic that he had going into the service.

Considering that these paramedics have not been exposed to a mass casualty incident to date, it can be presumed that their detailed coping experience is from their day to day clinical work, their perceptions of how they may cope with such an event and also a reflection on how colleagues coped with such an event.

There is an element of anticipation that these paramedics appear to experience, and the description that Harry details appears to be from a horror film. Harry acknowledges that he has never attended a mass casualty incident and this over anticipatory response could be a mechanism to psychologically protect him-self from what he may see if such an event does occur, with the projected anticipation being worse than the reality.

> *{do you feel prepared}… "as prepared as you ever could be for some-thing like that, what could be potentially a thousand people injured, screaming, blood every-where, bits of bodies everywhere, it would be just like a war zone. So as prepared as you could be for some-thing like that".* Harry, L312 – 316.

Emerging within this theme is the concept of how these individuals cope with the situations that they are exposed to in their job as front-line emergency professionals. It is evident that coping mechanisms are important, however it is unclear if these are purposefully developed or innate in the individual. The response appears necessary, individualistic in nature and dependent on their past experience, such as previous work in the army.

6.2.3 Psychological preparation

Due to the psychological distress that an unpredictable and multiple casualty event may cause, the participants suggested that psychological preparation could be considered an important and key component of emergency preparedness education. Isla was asked about her emergency preparedness training:

> *"there is the clinical aspect, clinical skills but not a lot else. I've not really thought about the psychological training before. To be fair, training is clinically based, triage based, making sure that we understand what we have to do, if and when, due to the vast amount of people but the psychological type stuff we don't really…. I don't know".* Isla, L54 – 62.

Isla does not appear to have considered the psychological aspect of her training and related role and puts a significant emphasis on to the physical and clinical skills aspect. From her account, it appears that psychological preparation is not included within the education curricula that she undertook.

James suggests that preparation focuses on helping others rather than on personal resilience, also highlighting the emphasis on the physical and clinical response:

> *"{sighs} I think you can be prepared, I think training can prepare you to be as ready as you physically can but you are never going to be…..if some-thing kicks off, of that style, if there are hundreds of casualties, which potentially there could be, we are never going to help every-body but you can go in there and make the best effort and come out and at the end of the day you would say yes".* James, L336 – 344.

It appears challenging to prepare an individual for an incident where, as James suggests, there are going to be hundreds of casualties. From an educational perspective, psychological preparation is challenging to deliver, both in a classroom and in a simulated environment and does not allow for individualised delivery, which is a recurring suggestion within the personal resilience subcategory.

David explains the challenge of preparing and measuring psychological preparation:

> *" I don't think that you can ever prepare for the psychological side. That comes down to your character. If you are a worrier or can let things just brush off you. Me, I worry but that's my character and I need to deal with it and I'm aware of my weaknesses. No, you could psychologically be ready for it but if you don't know what you are doing practically wise, the two don't marry up. The psychological side has to come second and treatment comes first, and you deal with the emotions afterwards".* David, L129 – 139.

David also prioritises the treatment of patients, rather than his own psychological resilience. He demonstrates self-awareness by noting the influence of his personality type on his psychological response. This traditional role of *'carer'* to others is seen in many health-professions but it could be suggested that just like on an airplane, paramedics need to apply their own oxygen masks before helping others. Whilst this is recognised advice during an airplane safety briefing, which also prepares individuals for an unexpected and unpredictable response, it does not appear to apply within this professional role. The focus appears to be on preparation to help others rather than psychological preparation for the paramedic.

Edward and Isla each acknowledge that it is challenging to gain real-life or simulated experience of this type of incident and no type of training can truly replicate the psychological needs and response of an actual event. Edward highlights that his mind-set is to deal with what he is presented with and put his emotions to one side until a later date:

> *"Until I have been in that environment I can not really comment on how I would feel about that scenario {being shot at}. But I have no problem going into it though. I would worry about it afterwards and I think you do that with every-thing, there is a first time for it, and that is the job that you do. You see a dead child then you've dealt with that and you move on to other firsts and use that as an experience for the next first time. Unfortunately, for the role we are in now, there are not that many things to experience that are rare but the training is broad, you would like to think that the amount of training that you do would get you through it ".* Edward, L263 – 275.

Isla also highlights the challenge of psychologically preparing paramedics:

> *"I don't think any-thing could prepare me for that to be honest. I mean, even when you simulate it, it's hard as it is not real so you can't... it is more the emotion of things than the actual doing. Especially with youngsters, you have a bit more of an emotional bond with them, especially if they are crying for you and things like that, it is a lot harder to walk away for any-one I would imagine, than to walk away from an adult but you can't train properly for that, because you don't know how you are going to feel, you just don't and we never had to do it".* Isla, L456 – 466.

The compartmentalising of emotion and physical response is a common trait in all the paramedics responses, as detailed in section 6.2.1 (we are not robots), and this may be a form of personal resilience enabling these individuals to cope with any situation that they are called to respond to.

Jessica suggests that personal resilience may be different for differing generations of paramedics, with the individuals who have been in the service for some time having a *'stiff upper lip'*:

> *"I think some people are quite 'stiff upper lip', I think I may be stereotyping here, I think maybe that might be the older generation of paramedics you know, mental health issues, we don't talk about it, that doesn't happen, nowadays people are more accepting and loads of people suffer from mental health problems and loads of people have blips or issues or things like that. These days it is more acceptable you know, and it's not frowned upon".* Jessica, L612 – 619.

Jessica considers this change in culture and suggests that the system is evolving, as resultant mental health issues are now being recognised

and accepted. The significance of this is whether the education, training and awareness in this area have adapted to this new mode of thinking. In addition, increased awareness and support needs to occur, particularly aimed at the stoic individual, so they undergo psychological preparation and can seek assistance as required.

The final subcategory within this superordinate theme is *'needing a back-up plan'*, which examines personal resilience and psychological support after a paramedic has attended an unexpected clinical incident.

6.2.4 Needing a back-up plan

Due to the nature of their work and the recognition of post-traumatic stress disorder as a diagnosis for front-line emergency workers (Alden et al, 2008. Fullerton et al, 2004. Jonsson et al, 2003. Jonsson & Segesten, 2003), it is assumed that psychological preparation is part of each stage of emergency preparedness and response. This is in contrast to Harry, a paramedic who has worked in the ambulance service for over twenty-five years, who implies that they, as paramedics, attend an incident and have to hope that a psychological *"back-up plan"* is in place.

> *"I think, probably as I am a little bit older then most of the people here [laughs] I have a sort of… ok it is going to happen you know and we have just got to deal with it whereas perhaps it will affect me later on, it wouldn't affect me… or I feel that it wouldn't affect me too much at that time and as I say I have not dealt with it, I don't know what it is going to like in the future or any-thing like that so I would be hopeful that there would be a back up sort of plan for us, if you know what I mean, to sort us out after".* Harry, L127 – 136.

Examining the post-incident perspective, Harry implies that the paramedic's individual professional experience and time in the service impacts on how each person deals with the psychological component of their role. He also takes on the stoic attitude that if it does happen, you just need to get on with it. The presumption that the more experienced paramedic will cope better after an event is in contrast with the view that an increase in exposure time may create a psychological overload. Interestingly, his quote suggests that there is no forward thinking in terms of psychological support; rather he hopes that there is an imaginative healing *'back-up plan'* for after an event

Mary implies that post-incident discussion is voluntary and includes both formal and informal support, as per the following extract:

> *"we have got things in place if we need to talk to any-body after an incident. We've got the team-leaders and every-one else in the group. We've got SALS, which is a liaison service who we can ring up and talk through the incident and they can give advise and refer us on if we need any other specialist help".* Mary, L64 -66.

The analysis suggests that firstly, practitioners are stoic about their emotional response to incidents. Secondly, that psychological support needs to be individualised and be present in all stages of preparedness (pre, during and post incident) and thirdly, there is limited consideration to the psychological preparation of individuals, as highlighted by Edward:

> *"[when asked about how paramedics cope] {long pause}. If I'm honest, I don't think the ambulance service considers your mental status at all, I think there is a big thing at the moment about traumatic depression and things like that and it is usually factored around the armed services, which you can understand but I think being in the.... {pause}I don't know. That is a difficult one. Every-one works differently and I think that you have your own mechanism of dealing with things, emergency services, regardless of which one it is, you will probably see and deal with a lot more nastier things over a longer period of time and I think that is maybe not considered as much as it should be. But then I honestly think that it is part and parcel of the job as well. I came into the job knowing that I am going to see and deal with things, that the normal every-day jobs would never see. So I think you just learn to accept things better but again that only comes with time, doesn't it?".* Edward, L140 – 158.

The focus for psychological support currently appears to be on the post incident perspective, with Edward acknowledging that individuals need time to reflect and process what they have seen. Edward also links this to work from the armed services, and how they cope with the trauma that they have been exposed to. It is not clear from these transcripts what knowledge and evidence, if any, from the armed services is used in the psychological preparation of these individuals. As an alternative to a

'back-up plan', Edward suggests that psychological support emerges as an individualised, personal resilience response.

Sally focuses on debriefing post incident and suggests that this occurs in an informal manner. This links with the data analysis sections on role (6.1.1), action hero (6.1.2), language (6.1.3) and story-telling (8.1).

> *"some team leaders debrief after every job, some don't. I think a lot of it comes from banter in the mess room. Some-times if you have been to quite a serious job, it doesn't happen straight away, sometimes it is like tea and toast for a little bit and then someone will start chatting about it and it will turn into a debrief session where we just chat about things. I always find that better, you can sit better with it".* Sally L180 – 188.

In this instance, debriefing occurs in an informal manner, but a formal debrief could also be utilised as a psychological back-up and support post incident, promoting the individuals personal, psychological resilience.

In this section, four subthemes related to personal resilience, in the context of emergency preparedness have been explored. These are *'we are not robots'*, *'coping mechanisms'*, *'psychological preparation'* and *'needing a back-up plan'*. The next section offers a summary of this subordinate theme.

6.2.5 Summary of subordinate theme: Personal Resilience

Participants describe how they separate their physical response to an incident from their psychological response. It appears that this separation maybe is required as a coping mechanism and this could enable them to cope with an overwhelming incident. Many of the paramedics interviewed were stoic about the psychological impact of their role, despite the increasing awareness of post-traumatic stress disorder and the mental health implications of their clinical role.

It appears that many of the paramedics perceive the psychological pressure of their job as just part of their role. It is an area that they feel is difficult to train for due to a) the difficulty in simulating such a response, b) the individualised needs of the paramedic and c) the challenges of evaluating training effectiveness.

According to the presented accounts, it appears rare that psychological preparation occurs as part of these individuals emergency preparedness training. Post-incident, the data suggests that there is the opportunity to access an informal debriefing session and an option to contact a counselling service on a voluntary basis. A paramedic suggests that there needs to be a psychological *'back-up plan'* for this group of professionals if they are exposed to a major incident.

6.3 Summary of subordinate themes for the superordinate category: Self Determination

A summary of the main findings from the superordinate theme *'self determination'* is provided in this section, in relation to the experience of paramedics. This provides an understanding of some of the motivations, barriers and enablers for the individual engaging in emergency preparedness and these will be discussed further in Chapter 10.

Subordinate themes	Description
Self Identity	Participants described how their role was dynamic, with both physical and psychological dimensions. The metaphor of '*action hero'* was used to describe their job, with keywords such as *'adrenaline rush'*, *'superhuman'*, and *'exciting'* used within the scripts. This is in direct contrast to other participants who state that the majority of their time is spent training and waiting for some-thing to happen.
Personal Resilience	Participants describe how they need to be resilient when dealing with a major incident. However, their individual focus appears to be on the clinical response and dealing with the patient, rather than their own personal resilience. There appears a lack of awareness of the psychological impact of working in this type of environment, with additional work required on increasing awareness through training, preparation and support for these workers. Each paramedic suggests that personal resilience is individualistic in nature and is determined by numerous factors such as age, previous experience, generation and personality type. It is unclear how the individuals delivering the emergency preparedness education recognise the individual traits of the paramedic and their readiness to engage or their capacity to cope.

Table 6. *Summary of the two subordinate themes for Self Determination.*

The next chapter, Chapter 7, offers a discussion of the theme 'control' and its emerging subordinate and subcategories themes, supported by relevant literature, with an application to emergency preparedness.

CHAPTER 7

Findings: Control

7.0 Introduction

This section presents the superordinate theme of **'control'**. 'Control' reflects a number of identified aspects of the paramedic's experience. 'Control', as a theme, emerged when exploring paramedics' preparation and training, how they deal with uncertainty and the changing nature of an incident and their relationship with both their clinical equipment and their training program.

Three subordinate themes emerged from data analysis and are linked to the superordinate theme of *'control'*, with eight subcategories of themes representing different elements of 'control'.

All thirteen participants contribute to this category and there are thirteen participant accounts reported in this chapter.

Table 7 displays the subordinate themes and the related subthemes, with each category having a representative quote, as per IPA research result presentation guidance (see Chapter 5).

Figure 9. *Findings: control and related subordinate and subthemes.*

Table 7. *Subordinate and subthemes for the superordinate theme 'Control'.*

Subordinate theme	**Sub categories of themes**	**Verbatim quote from transcript**
7.1 Risk & Threat	**What is this 'emergency'? (7.1.1)**	*"Now I suppose most ambulance services and clinicians will think of a major incident or emergency planning as being a big bang incident and they don't really think of it in terms of surge control or in terms of winter pressures, as flu pandemic and those sorts of issues, so I think it covers all of those realms and covers business continuity too… it's about supplies, continuity, training, how do you stop and free up resources to deal with those peak demands".* Ben. L56 – 68.
	Thinking like a terrorist (7.1.2)	*"When I have been talking to a friend of mine who works as crew and I say to her 'if you ever notice a load of nail polish remover on the side' and she was like 'how are we meant to know this unless some-one teaches us'? I don't think they are trained as much, they are not taught what they should be taught".* Sally. L102 – 111.
	We've got the watches, the terrorists have the time (7.1.3)	*"There's a paradigm that we've got the watches, but the terrorists have got the time, so we don't know when it is going to happen, we don't know what it is going to consist of, where it is going to happen or how it is going to happen but every-time that the terrorists come out with a different methodology then we have to change our preparedness. The Mumbai scenario has changed our outlook completely on how we respond to an eventuality, a terrorist eventuality".* Philip. L83 – 92.

	Fatalism **(7.1.4)**	*"that day was quite stressful as that was the day when we realized actually what could happen. I think we all know that one day some-thing will happen but the difference is, it's a case of we are trained to do that one day and it is waiting for it to happen. I wouldn't say I lose sleep over it but when you watch stuff on tele it does make you think".* Sally. L155 – 161.
7.2 Uncertainty	**Planning for chaos** **(7.2.1)**	*"at the start of any incident, there is going to be, you are going to have 20 minutes, half an hour, of total and utter chaos, so if you encompass that into your plan, so your first hour is going to be chaos, it then becomes part of the plan and then you can work on from that because it will be chaos for the first hour, it will be total and utter chaos with masses and masses of casualties. You just have to prepare for the fact that it doesn't make any difference what decision you make. You have just got to make the decision and hopefully it is the best decision".* Harry. L86 – 96.
	Wanting certainty in an uncertain world **(7.2.2)**	*"the training is based on what the Government has put together for the National Risk Register, and what the ambulance service has been involved in there. Plus that training, I believe, is slightly focused on what they believe to be the greatest terrorist threat at the time. So we suddenly seem to have a sudden focus on what I believe is the current risk, which is why our training is often focused on one area although this is not confirmed".* Colin, L58 – 66.

7.3 Safety & Trust	**Equipment (7.3.1)**	*"I think also, in some particular jobs specifically, I also think the PPE make some people feel invincible and that is the bit that I was made very aware of the other day, that people feel invincible once they put it on and I think there is still that element that you need to be slightly safe about it".* Sally. L362 – 367.
	Training (7.3.2)	*"I feel confident as our training is spot on and we are training all the time. Even when we are on base we'll be practicing rope work and the working at height stuff so I am confident in what I am trained in so we are all ready to go to any job and we are all confident and we are all happy".* Mary. L145 – 150.

7.1 Risk & Threat

This section considers the subordinate theme of '*risk and threat*', examining how these individuals describe key components of an emergency and how this concept differs from their routine work. It also offers a contextual picture of their experience of the current threat and risk dimension. Discussion as to how the nature of these incidents is changing, resulting in paramedics adapting and changing their practice occurs. Finally, this section explores the theme of fatalism, in context of the paramedics' thoughts on engaging with a mass casualty incident.

Four subcategories of themes were noted under this subordinate theme:

- What is this emergency?
- Thinking like a terrorist
- We've got the watches, the terrorists have the time
- Fatalism

7.1.1 What is this '*emergency*'?

All participants attempted to define what the *'emergency'* is that they were having this specialised preparation for. Participants implied that this type of emergency is different from their day-to-day practice, but were unable to offer specific examples as to the differing components.

Through the transcripts, the definition appeared subjective, dependent on the role and experience of the respondent.

> *{definition} "to me? Officially? Or from a Civil Contingencies Act? Or Both? From a Civil Contingencies Act and from JESIP there are different definitions and my intention or my requirement [emphasised] of that is to teach that so we are aware, we are able to respond, we're equipped to and we're competent to respond and we have sufficient staff trained to respond to an emergency or a disruptive challenge".* Philip, L45 – 55.

Philip implies that there are different definitions for differing contexts, and offers a legal and a multi-agency example. It is unclear as to the significance on clinical practice of these differing definitions, and the impact that this has on the individual and organization in terms of preparation and response. Philip suggests that key components of preparing for this type of *"disruptive challenge"* are 1). education, 2). awareness, 3). equipment, 4). competence and 5). staffing and resources.

On reflection, these constituents appear generic and could be applied to multiple types of emergency, whether a big bang or rising tide incident or any singular clinical presentation such as a stroke or a heart attack. Additional detail on each component is required to fully understand their impact and influence on the concept of emergency preparedness, as opposed to a routine healthcare response. Philip appears to suggest that it is a requirement to educate his colleagues on key emergency preparedness definitions, so they are able to provide an operational response.

Edward also suggests that this 'different' type of emergency is challenging to define but implies it should be categorized based on the clinical findings at the scene, as a consequence of the presenting clinical information such as the type of incident and the patients presenting injury.

> *"It is difficult to answer really. It is that personal and subjective opinion of an incident, isn't it? It depends on what sort of incident it is, what sort of injuries you've got and whether there are any other factors involved in it".* Edward, L70 – 74.

The suggestion of personal subjectivity could impact clinical practice, as it may be challenging for the practitioner to declare a major incident without clear-cut parameters. Any set parameters would need to exist at a local service level due to differing demands and health service structure in an urban versus a rural setting for example.

An additional perspective, beyond the expected health-care implications of such an incident, is the business continuity and operational resilience aspect of this type of emergency.

> *"Now I suppose most ambulance services and clinicians will think of a major incident or emergency planning as being a big bang incident and they don't really think of it in terms of surge control or in terms of winter pressures, a flu pandemic and those sorts of issues so I think it covers all of those realms and covers business continuity too…. it is obviously a lot broader than that. It's about supplies, continuity, training, how do you stop and free up resources to deal with those peak demands".* Ben, L56 – 68.

Ben suggests that this type of emergency goes beyond health-care and encompasses winter surge and flu pandemics and a key component of its definition concerns the supply of resources to meet demand. A business response model is highlighted by some of the paramedics as another dimension of this discipline, although the majority of responding paramedics appear to focus on the clinical aspect of emergency response. It could be considered whether this is a primary function of the individual paramedic as their aim should be in the safe treatment of casualties under the Civil Contingencies Act (2004).

Multiple respondents used the term *'capability'* in their response in relation to definitions and suggest that such an incident stretches the ambulance services response capability. Colin notes this in his quote and suggests that these events are not part of their regular response, which is presumably when the ambulance service can meet the clinical demands.

> *"well for the emergency service, it [an emergency] is something that stretches our capability, in one shape or form. Any situation which is not part of their day-to-day operational capability. So how they prepare and equip themselves for that type of situation really".* Colin, L43 – 47.

This broad definition appears to suit an area that is diverse and generic, however it appears challenging to prepare for some-thing when there is no clear guidance as to what the individual paramedic is preparing for. A possible explanation is that the reality of a definition of emergency encompasses a broad range of incidents such as natural disaster, a terrorist

incident or a mass transport accident, with each incident requiring specific input and resources. Therefore stating that it stretches capability reflects the impact on the ambulance service rather than the impact on the individual practitioner and the expected engagement of them at a discrete level.

Tony also suggests that these incidents are different to routine work, and requires additional resources or a specialist type of response:

> *"I'll tell you…. emergency preparedness are events that we would not expect to happen on a daily basis. They would stretch our resources or require specialist response to mitigate".* Tony, L26 – 29.

Tony talks about capability, capacity and resources as defining characteristics of these incidents. He uses functional language and appears in command of the subject area, possibly reflective of his clinical role and his specialist education in emergency preparedness.

Eleven paramedics highlighted the demand on resources as a key component of emergency preparedness and response, however it is unclear which category of resources was being discussed. Considering their field of work, this may be human resources, but it can be presumed that this also impacts on financial and organizational resources, in addition to the emotional and physical resources suggested in chapter 6.

Isla proposes that an emergency is an event on a *"bigger scale"* to their routine work, and considers that the number of casualties and the number of responders would be greater than a paramedic typically deals with:

> *{define a EP/major emergency} "it means being ready for a major emergency, putting plans in place which are agreed and ready in case any-thing happens, it is good to go & with mass casualties, mass vehicles, where you would need more than your run of the mill couple of ambulances. Any-thing on a bigger scale that needs more people to cope".* Isla, L24 – 29.

This definition has implications from an organizational level, to ensure that large numbers of staff are trained and are ready to be deployed at short notice. The word *"cope"* is used, which implies minimal efficiency and a struggle, as opposed to a successful response and it could be considered that this could be an emergency preparedness aim; to be able to cope with these incidents.

Preparing for this type of 'emergency' appears different from their normal day-to-day work in terms of resources, capacity and capability. However, it needs to be questioned what *'normal'* is, as this would differ dependent on the time of the year and geographical location. The majority of participants believed that in the event of an unexpected incident, the ultimate aim is to supply additional resources. There appears to be no consideration regarding supplying appropriate individuals with the necessary skills, refined according to the nature of the incident. This notion appears to address an overloaded and overwhelmed system as opposed to the detailed review of

what they are attending such as risk, threat, location and the specialist response required.

> *"it's the plans that we put in place for any big emergencies. I like to think that it is stuff outside the norm, not your everyday run in. But I guess whenever we get to a level when we are overrun that becomes an emergency, where we need to start implementing new plans and bringing in more officers to control whatever the situation may be. Whether it is an overload of the system or some-thing that has come out of the blue. Potential attacks, something like that. It is just how we are prepared to deal with it. What we have got as resilience, somewhat and what is left behind that we don't use every day. How we can implement that and get it out and make the most of it".* Rob, L3 – 15.

Eleven paramedics also discuss the issue of 'resilience'. This appeared to incorporate both personal and organisational resilience. However, it is unclear how resilience can be prepared for, measured or evaluated within this context.

Sally suggests a model where normal day-to-day practice fits into a clinical and policy "box" and any-thing outside of this would be this different type of emergency:

> *"in our role we need to step outside of the box and therefore things happen and that's the whole point of emergencies – nobody knows what is going to happen. And I think if every-thing slots into a policy then it's not an emergency so therefore that kind of defeats the point. So to be an emergency there has to be some-thing about it that makes it sit outside of a normal procedure".* Sally, L 210 – 217.

The abstraction of emergency preparedness raises questions on how the individual's role changes to this response outside the normal routine, impacting on the preparation, training, response and decision-making within this environment.

This section highlights that there is not one definition of emergency preparedness. The term appears subjective to the paramedics, however key aspects that are identified include that it is different to routine work, it has resource and capability implications and often involves a large number of casualties. There appears to be an uncertainty within preparedness, with practitioners unsure exactly what they are training for, possibly reflecting the changing nature of the threat.

7.1.2 Thinking like a terrorist

It was clear from the transcripts of nine participants that the evolving terrorist threat within the United Kingdom has impacted on their clinical preparation, requiring them to *"think like a terrorist"*, in addition to a paramedic. This new sub-role requires the paramedic to have increased awareness of dangerous activity and pre-empt the type of response that they may need to deliver, enabling advanced preparedness and offering them some control in an uncertain and changing landscape.

Detecting suspicious activity is a role undertaken primarily by the police and security services, but Sally suggests that paramedics, who are front-line responders, have a functional surveillance role too.

> *"we are unfortunately not going to be in a position where we are going to be looking out for those things. It is going to be Trust staff and crews on the road. When I have been talking to a friend of mine, who works as a crew and I say to her 'if you ever notice a load of nail polish remover on the side' and she was like 'how are we meant to know this unless some-one teaches us'? I don't think they're trained as much, they are not taught what they should be taught".* Sally, L 102 – 11.

Sally reflects that not all paramedics' surveillance training is sufficient, perhaps indicating a lack of education. This appears to frustrate Sally who seems to be in control of her own practice but appears concerned that her colleagues are not educated sufficiently to recognise suspicious activity.

Colin also highlights the surveillance role that paramedics are undertaking in response to the terrorist threat:

> *"This year, they {normal paramedics}, as part of their annual update they are looking at the vulnerable people being converted into extremism, and keeping a eye out for that. I suppose in a way that is part of emergency preparedness in some way".* Colin, L169 – 172.

He acknowledges that awareness of extremists' actions is a component of emergency preparedness, implying that emergency preparedness training content needs to evolve and be developed in response to current threats.

The ambulance service is primarily responsible for health response (NHS England, 2014). Undertaking surveillance work may compromise the responder's relationship of healthcare professional and patient in the context of confidentiality and first-line medical treatment. In addition, it is

unclear who is educating the paramedics on this surveillance role, if the content is standardised throughout the U.K and whether it is updated in a routine manner to reflect the rapidly changing threat and risk that these paramedics are dealing with.

An additional example of *"thinking like a terrorist"* is considering when and how a terrorist may attack and reviewing deficiencies in the system. Colin offers an example of this within his quote:

> *"If I was a terrorist I would attack in January, right in the middle of the winter pressures".* Colin, L269 – 271.

Colin shows an understanding of possible weaknesses in the system and the potential opportunity for the 'unexpected', reflecting the uncertainty of working in the role. The focus and perception on terrorism was visible in all transcripts perhaps reflecting a current focus on the preparation and anticipatory response within the ambulance service and enabling these individuals to feel in control of an invisible threat.

Many of the paramedics discussed recent terrorist incidents, and what they, as individuals, had learnt from them. Training and recognition of explosive devices is included as part of the HART team training and reflects a current threat. This is a role which would have traditionally have been undertaken by the police and security services, whilst the ambulance service treats the casualties. Tony considers how his knowledge of this area impacts his

thinking, enabling him to provide an insight into how a terrorist works and how this impacts his clinical role.

> *"I remember watching the Boston bombings and straight away I thought 'home-made explosive' because of the way the explosion was as we are trained in explosive recognition. Which straight away got me thinking if it is homemade, is it from abroad, what is it? Because that's a professional interest. But I think it is a bit macabre really as the public will be thinking that's awful and I think it is really interesting [laughs] how they've done that and also the method they use, where they put one bomb there to shuffle every-body down the street, they cocked their timings up as terrorists do, not very bright people [laughs] so I found it interesting which probably sounds a bit awful to the lay person".* Tony, L 288 – 301.

This new knowledge of explosive recognition appears to give Tony some control of the situation, even as a passive viewer watching an incident on television. He seems confident and assured as to what the current situation is, which would impact his on the scene response and his feeling of safety if he were in attendance. He acknowledges that this area is a professional interest, and justifies his role and interest in this area, compared to a layperson that may have felt repulsed at the scenes on television.

The concept of '*thinking like a terrorist*' may also be helpful when predicting the nature and number of injuries. James highlights this with an example of a shooting incident in a busy shopping mall:

> *"in terms of, it doesn't have to be in terms of numbers, you know if I went to stand at the bottom of the escalator at the Bull Ring on a Saturday before Christmas with an AK47, how many people are you going to kill? A lot. I've never held one before, well I have held one but I've never fired one before but I am sure, as I understand it, with little training you could take out a lot of people with just one person".* James, L230 – 237.

'Thinking like a terrorist' appears to be a new form of knowledge that could be captured and used to enhance the role of the individual paramedic and the ambulance service through potentially anticipating the range and type of incident they may be called to attend and also the clinical response required to meet the needs of the presenting casualties through pattern recognition from previous incidents. This subtheme offers an insight into the type of education these individuals have had, reflecting the current risk and threat that the United Kingdom is currently experiencing and also offers them possible control of a situation that they are unable to regulate.

7.1.3 We've got the watches, the terrorists have the time

All thirteen paramedics suggested that they felt a lack of control in their anticipatory planning for a terrorist incident when reviewing the type of incident and the presenting mechanism of injury. Philip summarises this by suggesting that "*we've got the watches, but the terrorists have the time".* He proposes that as a paramedic, he is asked to plan for some-thing although he doesn't know 1). when it will happen. 2). what will happen 3). where it will happen and 4). how it will happen. This perhaps reflects the focus on response and offers an insight into the lack of control that these responders feel when dealing with this area.

> *"There's a paradigm that we've got the watches, but the terrorists have got the time, so we don't know when it is going to happen, we don't know what it is going to consist of, where it is going to happen or how it is going to happen but every-time that the terrorists come out with a different methodology then we have to change our preparedness. The Mumbai scenario has changed our outlook completely on how we respond to an eventuality, a terrorist eventuality".* Philip, L83 – 92.

Sally articulates a similar feeling when she suggests that the terrorists are always one step ahead:

> *"we've just had some bits from our managers about the Boko Harem, as their group are becoming quite big in the news and I think, like I say the London bombings are a great one, in the fact that what people can do without realizing it. Terrorists and that kind of world is becoming very prominent, they are thinking differently and however much we have people here, who are terrorism Consultants, however much work they put in to it, these people are always going to be a step ahead".* Sally, L 79 – 87.

This could be viewed as a defeatist attitude, implying that the emergency services are engaged in a losing battle. It may reflect the paramedics' natural reactionary response to a situation and shows some frustration of the lack of control these health-care workers have of this uncertain threat.
The significance of this in terms of preparation is the need for some flexibility and adaptability within any existing plans, with the opportunity to frequently update them (as opposed to part of a normal five years review cycle).

No paramedic suggested how they could address the changing threat in the context of emergency preparation and feel more in control; rather they

acknowledged that the terrorists and their threat are evolving and it was challenging to engage with these changes, even for experts in this specialty.

This section demonstrates that the paramedics acknowledge that the risk and threat is real, however they feel like they have little control over the potential events resulting in them feeling that they are always on the back foot, implying a disadvantage in their preparation at an individual and group level.

7.1.4 Fatalism

All participants implied that an attack is likely to happen within their region. Within all the responses there was a feeling of fatalism, suggesting an attack will happen but they, as individuals, have minimal control over this. Fatalism, within this context, examines the belief and acceptance that events are out of their control. Once more, the element of lack of control is visible within this subcategory.

> *"{pauses} yes I do actually…. I do think it is inevitable that we will have some sort of event, given that we have all the intelligence and that there is/we have about identifying certain plots and those sorts of things".* Ben, L626 – 631.

These individuals have a resigned attitude to this risk. Rather than being distressed, each individual appeared to focus on being prepared to respond, rather than worrying about what they can not control on the day to day. Jessica articulates this in her quote:

> *"If I'm honest then no, that's just down to my personality, I just think if it is going to happen then it's going to happen and it is out of my control and I'll just have to deal with it and 'touch wood' it won't ever happen but you know… I'm realistic but also quite, I don't want to spend my whole life and my career worrying about what ifs, it's just pointless in my opinion".* Jessica, L347 – 343.

The sense of focus on what they can control, which is the training and planning, was particularly significant within the transcripts. This control over their education appears to offer some calmness and reassurance as they *'wait'* for an event.

Jessica describes the media role in education and raising awareness of such a possibility.

> *"I think, if I'm honest, the media has a lot to answer for as a lot of it is blown way [emphasized] out of proportion. For sure there is a lot going on behind the scenes, no-one is naïve to think we are perfect. But at the same time the media has a lot to answer for, sort of raising tensions and for instilling fear when it doesn't necessarily need to be. At the end of the day if a terrorist or some lunatic or someone else is going to go out and do something they will find a way and they will do it [emphatically], regardless of what M15 {said dismissively} or any-thing else that happens".* Jessica, L320 – 330.

Like Jessica, other participants believe that the media *'blows it out of proportion'* which may result in a double-edged sword for the emergency services as it potentially causes panic and alarm, but also diverts resources such as time and money at this specialty. Again, the issue of control is verbalised, with the suggestion that no amount of intelligence will stop an attack, so a fatalistic attitude is prevalent.

Interestingly Jessica is the most junior and inexperienced of the paramedics interviewed and her views may reflect a lack of exposure to the mandatory training that the ambulance service offers and also a lack of exposure to real-life incidents. She appears resigned that *"there's not much you can do".*

> *"as I said if someone is going to do it, they are going to do it regardless so anyway, if you are unlucky enough to be caught in it you just have to grit your teeth and get on with it. There's not much you can do [laughs*]". Jessica, L338 – 342.

This is in contrast to the notion that there are many factors that can be controlled such as adequate and effective education. She suggests that there is an element of 'luck' involved in being called to a real incident, which is contrary to the control element of this discussion, and the feeling of helplessness as you need to just get on with things.

Despite these 'on the road' paramedics being definitive about the risk of an attack happening, their thoughts appear very different from the HART team paramedics. This is visible in the following quote from Harry:

> *"if you asked people on the road if they thought it was going to happen today they would say no, it might happen some-time. We are here and we think it could be today. Outside, it is like, no, I don't know, I need my break! And that is part and parcel of it really".*
> Harry, L372 – 277.

Harry states that he thought the paramedics focus would be on the day to day and they would have no interest in engaging with this subject area,

when the reality is very different. This has impact on team working, education and also role perception.

The fact that these individuals believe that there is a genuine threat would presumably impact on all aspects of their engagement with this area including time, resources, training, and engagement with risk assessment. Some of the more senior members interviewed mentioned the Irish Republican Army (IRA) threat, and reflect that even though some of the dimensions of emergency preparedness have changed, there has been a constant background threat in this country for many years.

> *"I genuinely believe that it is a threat. I do genuinely believe that there is a threat there. In terms of you now, you still have the underlying bubbling of what was the old IRA and factions that you have through that and that is a bit of a risk".* Harry, L224 – 229.

This section demonstrates that the paramedics believe that the threat and risk is real. There appears to be a division to their pragmatic and fatalistic attitude within their responses. There are differing attitudes between paramedics as some appear to believe that there is nothing they can do, and they will just get on with it if they are unlucky enough to respond to such an incident, whereas other paramedics appear to feel that if they engage with the threat and related training, it offers them some control over this unpredictable but realistic threat.

7.1.5 Summary of the Subordinate theme: Risk & Threat

The concept of risk and threat was evident within each presented subtheme. The paramedics highlighted that the event that they are likely to respond to, and its related risk is unclear as they do not know when, where, how or what will happen. This perceived lack of control is visible when defining and preparing for a major incident. It appeared challenging for a paramedic to define the term 'emergency preparedness', perhaps reflecting the multiple dimensions involved. The definition appears subjective to both the individual paramedics experience and the ambulance service as an organisation. However, identified components of emergency preparedness appeared to be resources, resilience and capability planning. The paramedics suggest that they have minimal control over the risk and threat that they encounter, but they try and mitigate this by educating themselves to 'think like a terrorist,' possibly gaining some control of this situation. All the paramedics believed that a mass casualty incident was likely. Although they presented contrasting views of their response to this, with some believing whatever happens is out of their control, whereas others believed that by engaging with training and the threat they were able to gain some control on the situation, but this will be with little real insight of how terrorists works. Additionally, there appeared to be a limited flexibility in the system to create an individualised response to individual preparedness.

The next section addresses how the paramedics experience 'uncertainty' within their emergency preparedness role.

7.2 Uncertainty

This section reports on the subordinate theme of uncertainty, within an emergency preparedness context. As identified in the previous section, the concept of emergency preparedness is challenging to define and appears to create different forms of uncertainty to the health care workers who are engaging with it. The level of uncertainty that these practitioners experience appears to impact on their perceived necessary control on preparation and response.

Two subcategories of themes were noted under this subordinate theme:-

- Planning for chaos
- Wanting certainty in an uncertain world

These subcategories will now be explored in more detail within this section.

7.2.1 Planning for chaos

Unlike planning for a medical clinical presentation, where a condition is fairly linear, emergency planning is preparing for incident where little is known about it. It has already been suggested that it is not known 1) when it will happen, 2) what will happen 3) where it will happen and 4) how it will happen. This lack of contextual knowledge creates an information chasm, where it could be suggested that health professionals are not planning for a singular thing, but are rather planning for possible chaos.

Philip suggests that no plan is good enough to survive an event and no plan will ever meet the needs of the first part of the health service response.

> *"those can cause me some trepidation but the thing that I'll always recall is that a famous statesman once said that no plan survives contact with the enemy, whoever that enemy may be. Whether that's God in his wisdom or a terrorist in his desire to cause disruption so no, it doesn't really worry me as I know whatever we do will not be enough in the first hour and half, two hours".* Philip, L76 – 83.

Philip appears pragmatic regarding the uncertainty of an incident; however he does not acknowledge the role of reflective learning, lessons learnt from previous incidents that are transferable or generalizable and could be incorporated into the planning.

Harry, who describes this initial period of response as 'chaos', also suggests that there is an identifiable time period where no plan will be adequate.

> *"at the start of any incident, there is going to be, you are going to have 20 minutes, half an hour of total and utter chaos, so if you encompass that into your plan, so your first hour is going to be chaos, it then becomes part of the plan and then you can work on from that because it will be, be chaos for the first hour, however it will be total and utter chaos with masses and masses of casualties, you just have to prepare for the fact that it doesn't make any difference what decision you make. You have just got to make the decision and hopefully it is the best decision".* Harry, L86 – 96.

He suggests incorporating this period of *'chaos'* into the plan, seemingly to offer control back to the practitioner. It is interesting that the term *'chaos'* is

used within this context, as these individuals suggest that their training offers them control and confidence in their response (section 7.2.1).

The need to be adaptable and flexible within plans is highlighted by Rob. This is in contrast with other suggestions of policies and protocols being strictly followed.

> *"is this as good as likely to happen with every emergency as you can come up with all the planning that you want, but plans always change and they change quick and early and they never go to the design of a scenario that is set out. But I think that most of us are adaptable enough to change to it, with the training that is rolled out".* Rob, L172 – 180.

Adaptability and flexibility appear to be a significant element of planning and response to a mass casualty incident, and whilst the published plans provide some structure and control when responding to an event, the requirement for individual practitioners to adapt in these high-pressure situations is evident within the transcripts.

The principle of deconstructing preparedness to learn and adapt may enable practitioners to feel an increase of control in a chaotic situation. Whilst plans cannot be tested for effectiveness until they are operationalised, they appear to need flexibility and adaptability to provide some control to the paramedic and to recognise the uncertainty that this area has to offer.

7.2.2 Wanting certainty in an uncertain world

This theme encapsulates the paramedics desire to make sense of and have a firm plan for whatever they may encounter in their professional world. This form of control is difficult to apply to a situation that is uncertain and evolves over a period of time, often due to external factors.

Participants acknowledged the uncertainty of emergency preparedness, and suggested that the use of guidelines and operating procedures in practice offered structure and control. In this instance, Philip describes how it is impossible to have a policy and procedure for every form of "disruptive challenge", and as a result practitioners need to be able to apply adaptability to their response:

> *"what we're saying, there's your guidance, you are a practitioner in your own right, use your common sense, the world has changed in this area compared to what it was half an hour ago, in particular with a large scale, disruptive challenge, the rules of attack, the event, the disruptive challenge are now known, you don't know what you are dealing with. So you can't have a policy or procedure for it. You can have a plan, and you can have guidance and that's what you've got to adapt that plan and that's what I need to get through to people".* Philip, L262 – 272.

This suggests that preparation could be a blending of protocols, plans, common sense and intuition, with the recognition of the individual qualities that a practitioner requires for this. This flexibility and acknowledgement that common sense is a component of response may offer some reassurance and control to the paramedic.

The perception of certainty appears to result in confidence:

> *"it worries me in a way. If you are aware of things I think it fills you with more confidence. To bury your head in the sand is a false expectation of life really, but the work you come to is unpredictable but you know, you picture an idea of the work that you come to in the community but we never foresee the train crash, the major car accident or the terrorist threat".* David, L256 – 263.

David suggests that if you can visualize the incident, this results in an internal confidence and it is the unknown factors that cause him anxiety. The notion of "*burying your head in the sand*" suggests that some practitioners, rather than deal with the possibility of this overwhelming reality, would rather exist in a state of denial, suggesting that they would rather function with what they can control and ignore what they cannot control.

The linking of an element of control with certainty and confidence is visible in many of these transcripts. Academia and experience appear to offer some certainty to Tony, who suggests that these elements contribute to protocols, but they do not consider how best to manage unpredictability.

> *"I think it is a two-pronged approach. You need academic training to do it and also the experience to deploy it in the real world. Once the incident starts, risk assessment practice goes out the window so you need to put your procedures in place before the incident, rather than making it up before you go along and that only comes with experience, you can't teach that".* Tony, L89 – 102.

Advanced planning, with procedures being in place, appears an important part of individual role preparedness. This advance planning offers reassurance and control to the practitioner, enabling them to actively engage in the preparedness process. Interestingly, Tony highlights the positive impact of experience in this area which due to the rarity of these incidents is problematic to obtain.

Interestingly, the national threat and risk levels that are issued to emergency services and the general public regarding the likelihood of a terrorist attack or adverse weather event appear to offer minimal control and certainty to the paramedics as Rob discusses:

> *"{are these emergencies predictable?} – some of them… well a major incident is unpredictable. We have to have levels to say the possibility is high but when it actually happens it is anybody's guess. A lot of the previous incidents that have happened have come out of the blue, we say that we are expecting one but you can expect it for a week and it never happens, you can expect it for a month. For a long time we have been at that sort of level where it is expected, or there is a substantial risk. But when it happens it will be a bit of a surprise".* Rob, L39 – 49.

Rob notes the surprise that he experienced when an incident happens, even though the possibility of an event is high. This questions the usefulness of the current warning system (as discussed in 1.5.4) and whether it really impacts on the preparedness levels of these paramedics. It also suggests an element of fatigue at the prolonged period of time when these levels are at 'imminent' and no incident occurs, which supports the idea of paramedics 'waiting' as discussed previously in 7.1.1. The unpredictability and surprise

element creates an uncertainty within their working world, which is in contrast to the control that these warning systems aim to offer.

7.2.3 Summary of the subordinate theme: Uncertainty

It is evident from these transcripts that working in the area of emergency preparedness creates much uncertainty due to the diverseness and unpredictability of these events and that paramedics value some level of control. While paramedics are unable to control the origin of the incident, they attempt to assert some control over the planning and response elements, which tend to be made up of both fixed protocols and the capacity to respond flexibly. No plan will ever meet the needs of these unique incidents, but by acknowledging and accepting this, in addition to acknowledging flexibility and adaptability as the situation requires, it appears to offer these health care professionals some control of their situation.

7.3 Safety & Trust

This section reports on how the paramedics, through their training and their specialist clinical equipment, perceive an increase in safety in the context of an incident. Alongside the need for flexibility and responsiveness, the symbolism of equipment and the response to training appears to also offer the paramedics an element of control in an area with multiple uncertainties.

Two subcategories of themes are noted under this subordinate theme.

These are:

- Equipment
- Training

These will be discussed further in relation to the subordinate theme of safety and trust and the superordinate theme of control.

7.3.1 Equipment

All the participants discussed the use of specialist emergency preparedness equipment in their interviews. It emerged from the data analysis that their clinical equipment appeared to offer the paramedic a perceived element of safety and they placed trust onto this equipment that enabled them to function within their role.

Edward suggests that 'trust' is a key concept in his response role, with the requirement to trust his equipment and the information his colleagues convey to him:

> *"within a more challenging environment, like the hot zones and areas like that it's… I found it is about trusting your equipment and trusting what you have been told and if you can get that into your head that the ropes are going to hold you whether you are 50 foot off the ground or 150 feet off the ground. That is the key thing to me. Same as breathing apparatus, once you know that you can go to that environment and you would be safe but I think that takes time. I think that comes with experience and time again, which is new to me at the moment".* Edward, L107 – 118.

There appears to be three components to 'trust' within this context. Firstly, the importance of experience, implying that 'trust' is more prevalent in the expert practitioner. Secondly, repeated exposure to clinical equipment in training is important to develop a 'trust' relationship with it. Thirdly, trusting clinical equipment has a psychological component to it. Edward highlights this by stating *"if you can get that into your head"* then you can use this equipment in numerous scenarios and the detail of the scenario is irrelevant.

Jessica implies that the only option is to trust your equipment and it is not a conscious decision, rather as a professional she needs to function in her role:

> *"it is going to work, you can only rely on what's there, like, trust in the equipment that they've given you whatever research they've done with it behind you know, you're just going to have to cope".* Jessica, L365 – 369.

She appears to suggest an additional 'trust' relationship, and that is to the manufacturers who she perceives as accountable as they have researched, marketed and purchased this equipment. She is dismissive of this third party when she states *"that they've done…"*, suggesting that she has not checked out the equipment profile her-self, rather is relying on others to provide her with the information that she trusts implicitly.

Isla's trust in the equipment reduces her concerns about her personal safety:

> *"{safety}, no not really, we don't really discuss it [laughs], it is not some-thing that we ever discuss [laughs]. Yeah, but no, I don't worry because we are probably safer doing what we do then members of the public are cos' we have the equipment, all the PPE, we need to keep us safe, whereas they don't have any-thing to keep them safe apart from us helping them. I emphasise we should be the ones that are safe".* Isla, L121 - 128.
>
> PPE = Personal Protective Equipment

She suggests that she is in denial about the safety aspects of the role due to "burying her head in the sand". She believes that despite the risks involved in their role, she is safer as a result of the equipment she uses. This perceived increase in safety appears to occur in response to the symbolic nature of the equipment rather than its measureable effectiveness.

Sally also offers full confidence in her equipment, specifically the specialist equipment that she is issued with to deal with a chemical or biological incident.

> *{What are you comfortable engaging in?}"I'm alright with chemical, biological. It's the knowledge that the chemical will burn that filter in that amount of time. It is very definitive…. Firearms are one that I am probably not keen on. As yet again you can not stop any firearm incident whereas a chemical incident you can wear that bit of PPE and you may not be in charge of the chemical but you know that that bit of kit and I think that is the thing for me. The precise science. The things that scare me are the things that are unpredictable and chance".* Sally, L302 – 305.

She portrays an image of the equipment being an impenetrable wall, resulting in perceived safety and practitioner confidence in this situation. Additionally, she implies that chemical and biological incidents are more predictable compared to a shooting, where there is no equipment that provides relative safety. The idea of equipment in this setting offers some control to the practitioner compared to a shooting incident.

Sally suggests that this feeling of trust and safety can result in individuals feeling invincible. This could be linked with the action hero role as discussed in 6.1.2.

> *"I think also, in some particular jobs specifically, I also think the PPE make some people feel invincible and that is the bit that I was made very aware of the other day, that people feel invincible once they put it on and I think there is still that element that you need to be slightly safe about it".* Sally, L362 – 367.

There is also the image of a Russian roulette type game when discussing equipment choice. She suggests that one of the pieces of equipment often fails, which suggests that the feeling of safety is perhaps false and a method for these practitioners to feel in control at a time of personal stress to them.

> *"there is always that element of risk in the fact that one of the guys is testing them now and I am sure one of those suits will fail his testing and it is an element of risk…. and that is the one suit that we might of picked up as it is just chance which ones we pick up at the end of the day, but no, there is security in it".* Sally, L356 – 362.

These quotes offer examples of the trust that these practitioners place in their specialist emergency preparedness equipment, and how they equate safety with the possession of this equipment. Although they differentiate between different types of incidents and different forms of equipment, the need to feel safe is apparent and the symbolic importance of equipment in achieving this perception can be significant.

7.3.2 Training

All the paramedics interviewed mentioned aspects of their emergency preparedness training. In addition to providing knowledge for practice, training plays a key role in developing confidence and control, particularly when they value and trust their training. It is apparent that the trust they place on their training appears to offer them safety and confidence for the incidents that they potentially will be dealing with.

Mary highlights this in her quote below:

> *"I feel confident as our training is spot on and we are training all the time. Even when we are on base we'll be practicing rope work and the working at height stuff so I am confident in what I am trained in so we are all ready to go to any job and we are all confident and we are all happy".* Mary, L145 – 155.

She notes how the training is continuous and this appears to make the content fresh in her mind, providing safety, reassurance and trust. She perceives herself to be in control of her work, suggesting that she feels ready to respond to anything and feels confident in her training and this reflects

on her role. Training is possibly a way of developing control and confidence, if the practitioner trusts the training.

Rob reflects from a recent real-life training exercise that he attended:

> *"if you see an incident that I am not comfortable with then I will certainly step back but you sometimes don't know and these surprises happen and the particular exercise that I did with the Reading firearms I went into a old mall, shopping centre, cleared every-thing, every-thing was going really well and at the last minute there was a doorway with somebody screaming the other side and you can't see them. You do get a sense, and maybe because it was an exercise I was a little more relaxed and that is where the gunman came out. It makes you realize that it is that simple".* Rob, L351 – 362.

He talks about the surprise that he experienced in training, which potentially made him feel momentarily out of control. This experience appears to have taken him out of his 'safe' zone and offered a real-life and memorable learning experience for him. The opportunity to challenge the individual paramedic and question their control, whilst in a safe environment, appears to be a key area of education that could be developed.

Sally discusses some of the limitations of training in the next quote:

> *"Major disaster wise, the only thing that has ever worried me is a Nairobi style attack and that only worries me as it is massively high-risk to the staff. And that's the only thing… every other incident we can safely mitigate. We do loads of training on it but that is the one thing that no matter how much we train, on the day it is really going to be awful with casualty numbers and risks to our own staff".* Sally, L346 – 353.

Although she appears to trust and value the training, it is clear that she believes that training cannot prepare her for every scenario and that training, adaptability and responsiveness is only an element of preparedness. Sally uses the example of a marauding firearm incident, where an individual or individuals with a weapon attack indiscriminately. These types of incidents have been seen recently with mass shootings in Nairobi, North America, Australia and France. Possibly she feels that she has control when working in other incidents, for example adverse weather or when a bomb has exploded, but within a firearm incident there is a lack of control due to the unpredictable and continuous nature of the attack. This is an area where simulation is difficult to reflect reality and the risk to the safety of the health care worker is increased in clinical practice. It appears challenging to develop confidence and individualised preparedness for this type of incident.

Colin describes his own views on safety and preparation in the context of training and his role:

> *{Do you worry about your safety?}. "No! {said defensively} {And your family?}. Not really no. I don't worry about my safety. I trust my own abilities to keep my-self safe and the training we've had has been fairly good for more hazardous incidents. I would worry more about my safety if I was just a normal paramedic as I think you are more likely to bumble into some-thing that you are not prepared for there… so by nature that we have been activated to be hazardous normal road staff, our training should make us safer, our monitoring should make us safer".* Colin, L96 – 106.

He appears stoic, both verbally and through his body language when questioned about this area. This may be due to numerous reasons including a presentation of the *'action hero role'* (as discussed in section 6.1.2), as a form of coping with the risk that he perceives (as discussed around the issues of personal resilience, section 6.2) or be reflective of his more junior position. The interviewed paramedics appeared to project differing emotional responses to their clinical education, including comfort, control, reassurance or a defensive manner, highlighting the importance of considering the individual paramedic and their personal characteristics in emergency preparedness.

This section has reviewed how the paramedics perceive that their training, as one aspect of emergency preparedness, has a direct impact on their perception of safety within their role. Training appears to offer them a sense of control in some unpredictable situations.

7.3.3 Summary of subordinate theme: Safety & Trust

Safety and trust have been identified as key concepts in the context of emergency preparedness equipment and training. The paramedics perceive that their specialist equipment and focused training increases their perception of safety within their role, displaying trust that their equipment will work and function as it should. Overall this appears to provide increased personal confidence and a sense of control when engaging with an emergency. However, it is recognised that limitations occur within their

training as not all scenarios can be accurately replicated as drills or simulation.

7.4 Summary of subordinate themes for the superordinate category of 'Control'

Whilst the paramedics routinely prepare for an incident, this preparation is contextualised within a perception of uncertainty, in relation to the chance or risk of an incident happening and the characteristics of the incident. Their uncertainty translates into a feeling of powerlessness. Feeling in control was important to paramedics and a range of approaches were used to gain a sense of control through preparation, training, drawing on knowledge of terrorism, to inform what they thought of as 'an appropriate response'.

Subordinate themes	Description
Risk and Threat	The paramedics articulated that it is unclear what type of incident they are preparing for. There is a recognition that an incident is likely to occur, for which they may be unprepared. However, even with a heightened threat level, an incident may be a surprise. It appears that the incident has the control in this situation and the paramedic is *'on the back foot'* in their response to it. One way of gaining control is through preparation of a response and a newer role of *'thinking like a terrorist'* where the paramedic can gain information from what they see to build clues towards an appropriate ambulance service response.
Uncertainty	The area of emergency preparedness appears full of uncertainty. However the paramedics suggested that this should be recognised and a period of 'chaos' should be formulated into their planning so they expect the unexpected and respond to chaos. This offers them some control of the situation and some certainty when attending an uncertain situation. In addition, due to the uncertain nature of these incidents, flexibility and adaptability are important elements of emergency preparedness.
Safety and Trust	It is evident from these interviews that the paramedics have trust in both their equipment and their training, despite limitations of both of these elements being identified. This increase in confidence offers them increased control, which could be viewed as a form of personal resilience (see section 6.2).

Table 8. *Summary of the three subordinate themes for 'control'.*

This chapter has reviewed the superordinate theme of 'control' and how this concept impacts on paramedics as they engage in numerous aspects of emergency preparedness.

The next chapter presents participant findings in the context of experience-based practice. Included within this section is discussion of how these individuals perceive, use and transfer knowledge in the area of emergency preparedness, in addition to how they value practice-based knowledge and education.

CHAPTER 8

Findings: Experience-based practice

8.0 Introduction

This chapter explores the superordinate theme of '*experience-based practice*', reflecting the participant's experience of preparation and training. Participant views on the current emergency preparedness evidence-base, and how they use and apply it are explored.

Three subordinate themes are linked to the superordinate theme of '*experience-based practice*', with six subcategories of themes that represent the paramedics lived experience of training and application of knowledge in this area. These themes are detailed in figure 10.

All thirteen participants contribute to this category and there are eleven participant accounts reported in this chapter.

Table 9 provides an overview and an example for each subtheme, via a direct quotation.

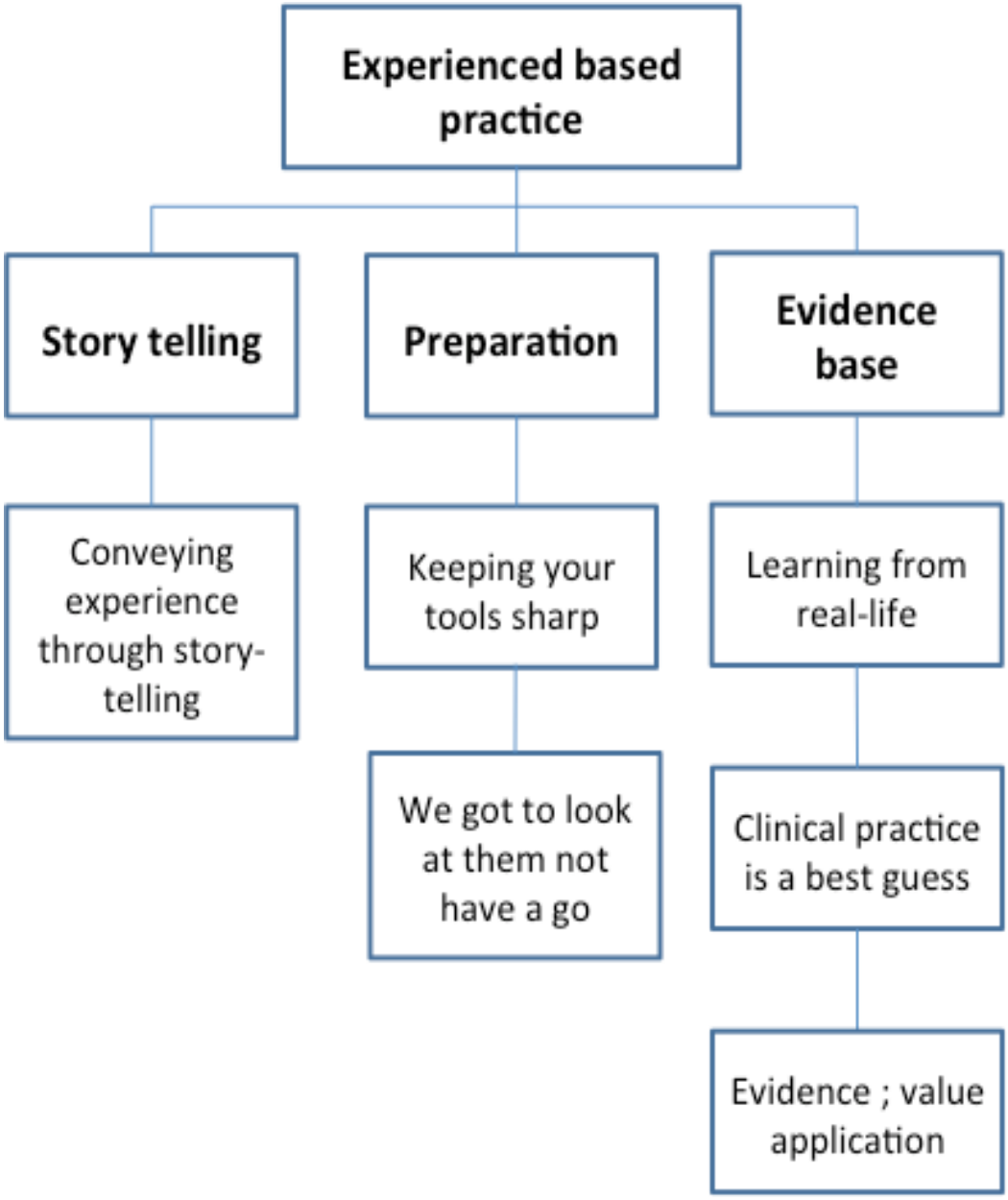

Figure 10. *Findings: experience-based practice and related subordinate and subthemes.*

Table 9. *Subordinate and subthemes for the superordinate theme 'Experience Based Practice"*

Subordinate theme	Subcategories of themes	Verbatim quote from transcript
8.1 Story-telling	**Conveying experience through story-telling (8.1.1)**	*"I had one person, when I was a student, my mentor was pointing out they were acting a bit strange, couldn't keep still and were shaking and it turns out that they were cerebrally irritated. Now I've never seen that before, but as a paramedic, since starting at West Mids, we came across a similar case and there was something about the behaviour that I remembered it from before so I prepared myself from knowing/building on from previous experience that this could maybe be the same thing and it was".* Jessica. L85 – 94.
8.2 Preparation	**Keeping your tools sharp (8.2.1)**	*"we are very lucky here as we get protected training time, which is unlike the rest of the NHS where it is so busy. Training is seen as more of a secondary need than the primary response, whereas our primary response here thankfully doesn't happen everyday so a lot of what we do is train for it, almost like a tool ready to get out of the tool box, you have to keep your tools sharp…."*. Tony. L145 – 151.
	We got to look at them, not have a go…. (8.2.2)	*"but also he brought in items from the HART team and gold command, stuff like the kit in our PPE on the ambulance. You have certain kit like face masks, full body suits and things like that and you also have injections if there is a gas attack and things like that so like we got to look at them, not have a go as such, they were fake ones so we got to have a look at the kit".* Jessica. L249 – 258.

8.3 Evidence-base	**Learning from real-life (8.3.1)**	*"so I would say that the evidence-base that we have for emergency preparedness really comes from looking at the large scale incidents. In terms of the big bang stuff we try to, it's a learning circle, more so than an actual thing. So we know it is a problem, how can we actually change it, we implement a new change then we wait for the next incident to see if those changes have actually had any effect".* Ben. L447 – 455.
	Clinical practice is a best guess (8.3.2)	*"I don't think the research is there, certainly evidence-based practice, it takes years to change some-thing and massive bodies of evidence to actually go ahead and do it whereas emergency planning is a lot of time, a best guess. What do we think will work?".* Tony. L224 – 228.
	Evidence: value and application (8.3.3)	*"I think anything that has been deemed an emergency has been reviewed to its wits end so I do believe that all the policies and procedures we work by are evidence-based, but I wouldn't know. You know when you say it; you would think I should really know that. But it then comes to the thing of how can we ever be prepared? How can an evidence-base prepare us when we don't know what is going to happen?".* Sally. L203 – 210.

8.1 Story-Telling

Participants' use of both formal and informal storytelling to educate themselves about emergency preparedness practice issues emerged as a strong theme.

This subordinate theme contains one subcategory:

- Conveying experience through story-telling

8.1.1 Conveying experience through story telling

Participants' expressed how, as practical learners, they recognise real-life experience as a valuable learning tool. This is achieved through formal teaching sessions and informally through on-the-job debriefs and '*chats*' with colleagues. During the interviews, they shared real-life experience through a range of clinical anecdotes and it became evident that '*story-telling*' is an important educational tool for participants and a vital conduit for information transfer.

Jessica shared a student clinical experience that she learnt from and was able to apply to a subsequent clinical presentation that she was called to. She recognised this process as gaining knowledge by *'building on previous experience'.* As she was telling this story, she appeared to convert, through speech, tone and body language, from a research participant into a storyteller detailing a clinical situation.

> *"I had one person when I was a student, my mentor was pointing out they were acting a bit strange, couldn't keep still and were shaking and it turns out that they were cerebrally irritated. Now I've never seen that before but as a paramedic, since starting at West Mids, we came across a similar case and there was something about the behaviour that I remembered it from before so I prepared myself from knowing/building on from previous experience that this could maybe be the same thing and it was".* Jessica, L85 – 94.

These clinical examples, which were numerous in her interview, offer an insight of how experience is shared through narration. Possibly these *'stories'* are shared with her colleagues at the ambulance station, in an informal manner, creating multiple learning opportunities through narration and subsequent reflection.

This method of obtaining experience, although not through direct clinical application, is effective third party sharing, where colleagues have experienced a significant incident first hand and simply tell their story. The richness of this is the prominence of contextual experience. Rob illustrates this below, in a formal education session where colleagues share their experience:

> *"we do get experts in, firearms, guys who have been in some of the biggest incidents that have happened in the UK in the last few years. Raoul Moat gets brought up as we have officers who were on the scene there and dealt with that. And Derrick Bird and the likes of that. We get a lot of information behind that and a lot of the bigger emergencies in the U.K. and a lot of experts come in and tell us a lot about them from pretty much every angle".* Rob, L453 – 462.

It is evident that practitioners respect these speakers and respond to their story-telling technique, possibly because of their credibility. This approach involves an individual's perspective and interpretation of events, and could be seen as autobiographical and subjective, as opposed to an objective

factual account. This classroom approach, utilising a power point slideshow, and incorporating video, does not allow the paramedic the opportunity for hands on application of knowledge, so could be viewed as one aspect of learning as opposed to a single mode of education.

James describes how a story-telling approach is presented as a case study within their formal education. These case studies, taken from real-life events around the world, produce a quality of self-reflection on how the scenario would and could be handled at an individual and local organisational level.

> *"I think you become, you just look at it as a kind of case study and think what would I have done? What would I have done differently? If I was there, and I arrived on that scene, what would I expect to find and what would I do? How would I deal with someone if they had their leg blown off? It is easier if their head is blown off isn't it as you don't do any-thing [laughs] but yes, the more severe critical people and I suppose doing this you tend to look at it a bit more objectively".* James, L479 – 488.

James drew attention to the clinical findings that may be present at a mass casualty, big-bang incident. It is unclear whether the detail within the case study has increased his anxiety, as it forces him to review the reality of such an event or it has decreased his apprehension as it may remove some of the initial distress at viewing such a clinical presentation. The application of humour, within this dialogue, may indicate a form of coping with the presented reality (as discussed previously in 6.1.3).

Through the transcripts, it is clear that paramedics value real-life experience as a credible form of knowledge, and storytelling is used to share this knowledge and experience with their colleagues. This method of sharing experience offers these individuals an insight into a real-life incident and enables the important individual elements to be combined.

8.1.2 Summary of the subordinate theme:- conveying experience through story-telling

This section highlights how story telling educates and informs paramedics learning. As practical workers, paramedics value real-life application and learning through experience. Conveying experience through story-telling is perceived as valuable to the recipient as practitioners have limited exposure to real-life major incidents, with only a relatively small number of practitioners gaining experience through their work. Paramedics who have experience are able to recount their involvement, but this is their interpretative, subjective perspective. Using cascade teaching, where an individual *'passes a message'* to their colleagues, may result in a change in account as the 'message' gets passed along and is potentially changed. In addition, the key facts from the described experience may not be applicable and transferable to the local setting. Whilst storytelling is one approach to education and learning, ideally this needs to be applied locally and also complemented with hands on training (see section 8.2.2).

8.2 Preparation

In relation to the experience-based practice theme, an identified dimension was preparation for clinical practice. This section focuses on two sub-categories within the subordinate theme of 'preparation':

- Keeping your tools sharp
- We go to look at them, not have a go….

This section focuses on the challenge of training for an incident that is a rarity for blue-light responders. Long periods of time, with no exposure to an incident, may result in practitioners who suffer from exercise fatigue through constant training or a decrease in clinical skills through non-utilisation. Participants reported that they value *'hands on'* time with their clinical equipment, in contrast to classroom based learning.

8.2.1 Keeping your tools sharp

When responding to an incident, paramedics utilise multiple skills including decision-making, clinical skills and the use of specialist equipment. Tony uses the metaphor of having a toolbox, containing implements that need to be '*sharp*' and ready for action. Within the HART team, he is allocated protected study time; however he recognises that training time can be limited for paramedics, due to the day-to-day ambulance service demands. He acknowledges that being ready to respond, almost like a sprinter in their starting blocks, is their primary aim but implies that their role is like being constantly on the starting line and waiting for that starting gun to go off.

> *"we are very lucky here as we get protected training time, which is unlike the rest of the NHS where it is so busy. Training is seen as more of a secondary need than the primary response, whereas our primary response here thankfully doesn't happen everyday so a lot of what we do is train for it, almost like a tool ready to get out of the tool box, you have to keep your tools sharp…."*. Tony, L145 – 152.

All participants acknowledged that they were in a constant anticipatory mode with regards a mass casualty event, resulting in concern about their clinical skills. These practical skills need to be up to date and useable with little notice and with minimal real-life application. Although Tony proposes that training is more important to the HART team, having these core skills to respond, with no notice, is paramount for all first responders who may have to deal with an unanticipated incident.

It was interesting to note how an emergency professional could be in post for a significant period of time, without any real-life exposure to an incident. Philip described a commander grade fire officer, based within an airport, who retired from the service having never been in an active incident.

> *"I went to a retirement for a fire officer who's been on the job for 33 years and he's never been to a fire in his life and he was one of the fire officers and commanders at East Midlands airport and you could argue that was a bonus, on the day he retired he could have had a major incident. How would he have dealt with it? He's 33 years experienced and a well-respected fire officer in his field, but he's never seen a major incident. Would he be competent to deal with that given that he's properly trained? He's certified. Is he experienced? That is the 3rd part of the triangle - to be competent. That's the bit that we are talking about, competency. It is possible to be competent I guess, but it is difficult to measure, I guess?"* Philip, L607 – 621.

This individual has been through many mandatory training cycles as part of his commander role but has essentially spent his career waiting for the 'big' incident. Philip suggests a conceptual triangle that encompasses '*training*', '*experience*' and '*competence*' and notes that this individual has not been able to obtain the '*experience*' side. Real-life experience is difficult to obtain, major incidents are rare and even if they do occur within their region, the practitioner may be off-duty during the activation phase. It is unclear how this lack of experience impacts on individual role performance. For example, if you had an individual, such as the commander that Philip discusses, working alongside a more junior member of staff who has been involved in an incident, it is unclear who would be more credible and competent. Philip acknowledges that competence is difficult to measure and implies that it includes dimensions beyond training and skills and questions whether an emergency care worker is competent through training alone.

From the participants' accounts it was evident that there is a sensitive balance between too little training and too frequent training. Rob highlights this issue in this extract.

> *"we have engaged in a lot of training. We sometimes get* ***exercisitis*** *where you do too many, and people get sort of lethargic about it, but for me, until some-thing happens that is what we are using and it is there and we are very proactive in doing that".* Rob, L666 – 671.

The state of '*exercisitis*' is a weariness resulting from repetitive training, with no real-life application. Rob contrasts how other individuals feel

"lethargic", compared to him-self who appears to prefer being proactive and engaging in this regular experience-based preparation.

It is unclear from the participants accounts as to how much training is too much and what could be done to address the balance between training to keep the '*tools sharp'* and overtraining resulting in practitioner fatigue. It is presumed that individual characteristics would influence this along with using a variety of teaching methods to remove some of the training repetitiveness.

These accounts highlight how paramedics must be prepared to respond with the appropriate skills, described as tools in this section. A notable challenge is ensuring constant optimal preparation, without overtraining resulting in individual inertia.

8.2.2 We got to look at them, not have a go….

All thirteen participants noted the requirement for hands-on, practical emergency preparedness education, reflecting the experiential and practical nature of their role. Although each individual appeared to be aware of the relevant guidelines and algorithms, there appeared a limited opportunity to get 'hands on' with clinical equipment during the preparedness phase. David appeared anxious that practical training is limited:

> *"we don't have enough of that as our work is nearly 100% not what we should be preparing for, the inevitable. We know it will happen, we don't know when it will happen and we don't think we are prepared enough. The ambulance service have given us guidelines and flow charts of what we should do if we go to accidents or the procedures to follow but we don't have the practical side, the rehearsals where we could get hands on".* David, L160 – 169.

The use of clinical guidelines and standard operating procedures appears important to the ambulance service, perhaps offering the practitioners some control in an uncertain environment. However, David's lack of practical preparedness is concerning as he would be a first responder on scene, both through his paramedic role and as a Category 1 responder (Civil Contingencies Act, 2004). He uses the term *'rehearsal'* which has connotations of a theatre play, implying numerous attempts before the curtain rises, rather than a once a year session (as per the guidelines). The term also conveys the image of practicing in safety, without being exposed to the general public.

The participants appear to value repetitive practising. David suggests that hands on preparation should be continuous and importantly, involve other blue-light responders:

> *"Practicing and practicing, rehearsals, hands on experience of working with other agencies. Because you can sit in the classroom and someone can give you a good talk on emergency preparedness, until you have had actually had the hands on experience… like children at school, if you've focused and held an object, you've learnt so much more than just spoken about it and seen it on a view-screen. Having more hands on experience, rehearsals and training would help".* David, L435 – 443.

He suggests that paramedic preparation is often passive and contrasts this to primary school, possibly reflecting his own children's experience, where the environment promotes interaction and physical engagement with the topic area. This perceived gap between the theoretical and practical aspects of the paramedics' preparation appears to result in concern for the individual paramedic and may impact on their confidence and competence in using clinical equipment.

The paramedics working within the HART team appeared to have more hands on time with equipment, reflecting their role requirements. Jessica highlighted that senior HART team members brought equipment to education sessions, enabling her to visually see equipment, but not physically prepare with it:

> *"but also he brought in items from the HART team and gold command like the kit in our PPE on the ambulance. You have certain kit like face masks, full body suits and things like that and you also have injections if there is a gas attack and things like that so like we got to look at them, not have a go as such, they were fake ones so we got to have a look at the kit,".* Jessica, L249 – 258.

Jessica's lack of first-hand experience with the equipment on her own ambulance raises some concerns as to how she would operate at an actual incident. Possible reasons for the lack of hands-on opportunity include infection control and cost implications of opening sealed packaging, time constraints during education sessions, large group numbers or perhaps because the equipment is perceived as specialist. Jessica described some frustration about this scenario. This lack of physical interaction appears to remove an element of control from the paramedics' preparedness.

The practical, “having a go”, approach appears important to each participant, and is significant when reviewing educational strategies. Whilst theoretical powerpoint presentations deliver key learning messages in a resource intensive manner, these practical based individuals appear to value functional time with equipment that would be used in a real-life incident and offers them some control whilst working in an area of uncertainty.

8.2.3 Summary of the subordinate theme:- preparation

In their accounts, participants clearly identify effective preparation as part of their role, even if they were unclear exactly what they were preparing for and so how best to prepare. Numerous participants highlighted that there was a lot of time waiting for an incident to happen, and it was challenging to keep their skills up to date without becoming lethargic through over-exercising. This suggests a diverse range of preparedness methods are required, to combat the repetitive nature of training and address individual learning needs. One extract suggested that ‘*training*’, ‘*experience*’ and ‘*competence*’ were required for a paramedic to respond to a major incident, but experience is difficult to obtain and it is unclear if training is a substitute for real-life exposure. Each participant acknowledged that clinical guidelines and protocols, which are often written from expert opinion, were integral to their response, but noted that in addition to theoretical preparation, practitioners needs practical and hands on preparation time too.

8.3 Evidence-base

This section reflects the type of emergency preparedness experience and learning that paramedic's value and includes the sub-themes:

- Learning from real-life
- Clinical practice is a best guess
- Evidence: value and application

Evidence-based practice is fundamental to many areas of health-care provision. This section discusses whether emergency preparedness is supported by evidence and how this evidence is viewed, valued and applied by these individuals.

8.3.1 Learning from real-life

New emergency preparedness knowledge appears derived from past experiences of actual events. Edward highlights this, suggesting that knowledge generation occurs through paramedics reflecting on the past, resulting in planning adaptation and improvements for future incidents.

> *"from what I understand from it, it all develops from major incidents from the past and people have reflected over different incidents on how things could be changed for the better".* Edward, L30 – 34.

Reflective practice is an important component of health care workers development (Palmer et al, 2004. Atkins & Murphy, 1993. Jasper, 2003).

Little is known, in an emergency preparedness context, how this reflection occurs and whether this is from an individual or organisational level. The participants imply that there is no standardized tool for reflection, suggesting that this process is ad hoc and lessons learnt are applied locally, rather than nationally.

Tony describes an example of learning, for the U.K. ambulance service, from a real-life incident, the Boston Bombings:

> *"we can learn from it {Boston bombings}. We always try and look at the last incident to improve our practice here. One of the things we do is never use the same RVP twice and we never use obvious RVPs. Because after the Tiger Tiger bombing in London, the failed bombings in London, the bombs subsequently failed to go off but they drove to the high-priority target, which was Glasgow airport {laughs}. Why drive all the way to Glasgow but there you go? {laughs} but something like that they actually put a bomb at the RVP. We learnt from that, now we never put a crew at the RVP, that is obvious, we go some-where that is going to be a bit awkward for us as we know that we are not going to be targeted by secondary devices".* Tony, L301 – 314.

Interestingly, paramedics responding and learning from real-life reflects the concept that terrorists are also responding to information in the public domain (see section 7.1.2) and changing their plans accordingly. The majority of those interviewed reported that they receive information from ambulance crews at the scene and also through interpretation of media reports, which forms a type of non-academic evidence that may impact on future clinical practice.

Numerous paramedics questioned the term '*evidence-base*' when I used it during the interviews. Ben suggests that a practical, rather than theoretical evidence-base is constructed from real-life learning, with new knowledge translated back into future practice:

> *"well I suppose it depends what you mean by an evidence-base? Certainly, I don't think that there are any randomized controlled trials and I don't even think, unless you count exercises as being the equivalent of an observational study to learn and practice from, the evidence-base is basically {pauses} we had an event and I suppose it is the aftermath of analyzing that event, that generates a little bit of evidence and a little bit of learning. I do think that we try to learn but we don't always get it right".* Ben, L430 – 439.

There was a sense amongst participants that evidence was solely academic quantitative studies, a category of research that they found difficult to relate to this area. Experience, amongst these paramedics, appeared to be valued as a form of evidence more than traditional academic research.

A learning circle, where the response is reviewed, reflected on and changed for a future event is suggested as a method for improving clinical practice. Again, this demonstrates how these paramedics appear to place importance on practical learning and real-life experience in the form of anecdotal and narrative based evidence, rather than the use of academic literature (which was not suggested by any of the respondents).

> *"So I would say that the evidence-base that we have for emergency preparedness, really comes from looking at the large scale incidents, in terms of the big bang stuff we try to, it's a learning circle, more so than an actual thing. So we know it is a problem, how can we actually change it, we implement a new change then we have to wait for the next incident to see if those changes have actually had any effect."* Ben, L447 – 455.

Emergency preparedness knowledge collation appears to occur in a subjective and non-standardised manner, resulting in changes at a local level, with no uniform structure. Although some transferable lessons will occur, no two incidents are the same. As a result, not all lessons learnt will be directly applicable to future incidents.

8.3.2 Clinical practice is a best guess

This section reviews how practitioners suggest that they '*make clinical practice up as they go along*', rather than support their clinical practice with an underlying evidence-base.

Tony appears keen for the development of an evidence-base in emergency preparedness and for this knowledge to be translated into practice, acknowledging that the specialty is still clinical practice, just like other more evidence-based aspects of the paramedics' role:

> *"I don't think the research is there, certainly evidence-based practice, it takes years to change some-thing and massive bodies of evidence to actually go ahead and do it whereas emergency planning is a lot of time, a best guess. What do we think will work? A lot of research is very recent. You do evidence-based research in clinical practice, you can find papers going back for years and years ago, emergency planning you don't seem to get that many old papers. A lot of them are based on disaster models from years ago that have never actually been took up and refined so then there is a lot more need for more research. It is still clinical practice whether you are in an emergency situation or not".* Tony, L224 – 237.

The paramedics, including Tony, noted that academic evidence appeared sparse, possibly reflecting a specialty that is in its infancy and an acknowledgment that the evidence that does exist is purely theoretical and has not been *'tested'* in real-life. These older models are based on a time period with differing threats (for example, the Irish Republican Army threat within England) and do not reflect the current risk and threat status in the United Kingdom or the current health-care system.

The *'best guess'* approach seems to be adopted by all responding paramedics, which suggests an intuitive element to their clinical role. As further research is carried out in this developing specialty, Tony acknowledges that in the future, clinical practice may incorporate traditional evidence.

Jessica, a recent graduate from an undergraduate paramedic course, suggests that in addition to reflection, clinical practice is *'made up'* as you go along, supporting the use of intuition as an enabler in this clinical speciality.

> *"and I think that comes with training and time generally [pauses to think] but I think a lot of it is made up as you go along and then building, using previous cases that you've been out to and almost like fine tuning it, I guess, that is what I think".* Jessica, L186 – 191.

It is reasonable to expect a new graduate to be up to date with current research, and question and critique its influence and impact. This emphasis on '*best guess*' reflects the lack of value placed on academic evidence from the interviewed paramedics.

This finding, of practice being *'made up'*, has an important implication for clinical practice. It suggests a lack of knowledge on the limited available research and how this translates into their standard operating procedures. It may also result in an individual ad hoc response when responding to an incident, where practice is based on personal intuition only. The concept of personal intuition in emergency preparedness appears poorly understood and its importance rarely recognised.

8.3.3 Evidence: value and application

The participants were asked how emergency preparedness evidence informs clinical practice. They indicated that their protocols are built on academic evidence, but it became clear, as they began to speak, that they questioned if this was accurate. Standard operating procedures appeared to be significantly valued as they directly influence clinical practice. From the transcripts, it appears that there is a separation between academic evidence and these clinical processes, an unawareness of any-thing beyond their own

local protocols, with the resultant attitude that the academic evidence does not influence their practice.

> *"I'm only aware of our own standard operating procedures. It is the bigger picture of it, I am not entirely aware of to be honest. I don't know if the SOPs are developed from an evidence-base, I would like to think that they are based on evidence-based practice but yeah [laughs], I would like to think that they are".* Edward*, L180 – 186.*

In this next extract, Edward notes some challenges of applying research into practice:

> *"If I was honest, I would think that there is too much research going on. I think things get changed a little too often…. I think if you have done it so long it is hard to adapt. The CPR thing changes, god knows how many times, one minute it's this and the next minute it is that and the joules changes all the time, it is hard to keep tabs with it".* Edward, L192 – 204.

This example suggests firstly, that Edward believes that too much research is being carried out (and possibly reflects that he values more time and money going directly into practice improvements). Secondly, that change, based on research, seem to occur too frequently, creating challenges transferring this knowledge into practice. Thirdly, with an example from resuscitation, how challenging it is for clinical staff to be updated on all these changes, reflecting the challenges of working full-time shifts and not being able or wanting to access continuing professional development programs.

Participants reflected that the ambulance service operates in isolation, resulting in paramedics who are not willing to share evidence or clinical

guidelines from other professions. This is evidenced from the quote from Rob, where he appears to take ownership of the ambulance service policy and sees no function of additional credible knowledge:

> *"I mean we have our own set of policies. We have a big policy and every-thing. The evidence-base [sighs], I'm not overly convinced where it all comes from". Rob, L433 – 435.*

Role and work culture identity (section 6.1) influences how these participants view themselves and the policies that they work with. There is no suggestion, from any of the paramedics, that research from allied professions can be transferred into this specialty or that research methods could be adapted to obtain useful knowledge to enhance their role. This then creates a challenge of how to transfer credible evidence from other relevant areas that these practitioners will engage with.

Colin notes a distinction between the western world and also of "*poorer countries*", observing that they may have different infrastructures in place:

> *{what does the evidence base look like in this field?}. "Poor. Because there are very few times when any-thing can actually happen and that you can gain evidence on. The last time there was a terrorist attack in the Western World was, in westernized countries was, I can't think off the top of my head! The attacks are happening in the poorer countries at the moment, where they haven't got the infrastructure in place".* Colin, L123 – 129.

This differing context could explain why these participants did not appear to value or transfer experience and evidence obtained from these settings into their day-to-day work.

Sally notes that it is challenging for an evidence-base to prepare them for some-thing, when they do not know what that some-thing is:

> *"I think any-thing that has been deemed an emergency has been reviewed to its wits end so I do believe that all the policies and procedures we work by are evidence based, but I wouldn't know. You know when you say it; you would think I should really know that. But it then comes to things of how can we ever be prepared? How can an evidence-base prepare us when we don't know what is going to happen?"* Sally. L203 – 210.

As we were talking it was evident that Sally had a '*lightbulb*' moment, with a realisation that she had always presumed that her policies were evidence-based but in reality she was unsure if they were. This was a pattern that occurred with 11 out of 13 interviews, and suggests a presumption that evidence-base is some-thing that is passively put into practice and not questioned.

The limited evidence in this area appears to be dismissed as irrelevant by each paramedic that was interviewed. A reason for this may be a lack of education on 'research' as part of their pre-registration education program, with Isla noting that paramedics did not know how to access, interpret and implement research evidence.

> {how do paramedics use evidence and research} *"generally we can't, we can read research, we can get information from it to put forward, I've read this, this and that. What do you think? and then a lot of the time it tends to get dismissed which is unfortunate. I think if they can get more paramedics then they're the ones that get listened to. General run of the mill people on the road don't have the credibility and you need the credibility for some-one to actually listen to you. So this isn't right, so why don't we try doing it this way, shall we change it a little bit?"* Isla, L322 – 333.

This suggests that perhaps research about their own perspectives and experiences needs to be put into a context that is accessible for these practitioners, both in terms of comprehension and application to their local work context. Another potential issue with paramedics using evidence is that they view academics as non-credible, as they do not work out on the road. The suggestion from Isla is that more on-the-road paramedics should be involved with the research side of their work as other practitioners are more likely to listen to them.

Isla sets forth an almost fatalistic approach to the use of evidence in practice, stating that all the policies and procedures are set in place, so what is the point of evaluating or challenging them?

> *"to be honest, I don't really know. I've never had much to do with the evidence-base side of practice of things and I haven't been given any information to say read this, go through this and that type of thing. The procedures are all set in place, aren't they?".* Isla, L249 – 253.

These accounts demonstrate that these paramedics appear to value experience. There is an assumption that their local protocols are evidence-based, but these individuals have not explored this further. It appears that

academic practice has minimal value and application in the area of emergency preparedness.

8.3.4 Summary of the subordinate theme:- evidence-base

Research evidence does not appear directly related to clinical practice and protocols, according to the paramedics that were interviewed. These paramedics appeared to value knowledge gained from past events and then transferred and applied at a local level. There seems to be some hesitancy to determine what credible evidence is within this specialty and how this could be applied to such an unpredictable and multi-dimensional area. The paramedics viewed academic knowledge with some suspicion, and seemed unaware on how to interpret and apply this at a local level. They determined that practice is often a *'best guess'* and *'made up'* as you go along.

8.4 Summary of subordinate themes for the superordinate category 'Experience Based Practice'.

Subordinate themes	Description
Story-telling	Story-telling, as a learning method, is used by paramedics, both formally and informally. They view case studies and learning through experience as credible so they naturally add their own experiences. Relatively few practitioners have exposure to a major incident, but those that have, share their individual accounts with their peers. Whilst useful, this is their interpretation of events and the content can not always be applied locally. Whilst case study, reflection and story-telling is one approach to education and learning, this needs to be applied locally and also complemented with hands on training (see section 8.2.2).
Preparation	Training and education is a key part of emergency preparedness. Practitioners noted that there is little exposure to real-life incidents and training, both theoretical and practical preparation is integral to confidence and competence. An area to be examined is the frequency and method of training, with comments of feeling under skilled and also lethargic about their performance due to excessive training. On reflection, as a result of the practical nature of this role, practitioners were clear that they valued hands on time with equipment, as opposed to reviewing theoretical guidelines.
Evidence-base	The paramedics perceive that the published evidence-base appears to have limited application in clinical pre-hospital practice. Practitioners are unable to interpret and apply academic studies at a local level, and prefer to rely on clinical policy and guidelines, which they are unsure of how they are derived. Response and decision making is often a *'best guess'* and practice is *'made up'* as they go along, with minimal thought on credible research.

Table 9. *Summary of the three subordinate themes for 'experience-based practice'.*

This section has reviewed the superordinate theme of 'experience-based practice', supported by participants' quotes. In the next section, divergences and convergences within the sample are considered, in addition to a summary of results before a discussion, supported by relevant literature in chapter 10.

CHAPTER 9

Summary of findings

9.0 Introduction

The purpose of this study was to explore and develop the concept of emergency preparedness, through the lived experience of the paramedic.

Interviews carried out with thirteen paramedics generated rich data and was analysed utilising an IPA framework. Subsequent emergent superordinate, subordinate and subthemes were identified and presented from the analysis, supported by participant quotes and relevant literature. This section summarises these key findings, with concepts and theory generation presented in chapter 10.

9.1 Summary of findings

Through this study, it is evident that emergency preparedness, through the lived experience of a paramedic, is a complex and multidimensional area. Three identified superordinate themes, reflecting their lived experience are *'self determination'*, *'control'* and *'experience-based practice'*. Within each of these themes, subordinate themes were identified, reflecting dimensions of lived experience that have not previously been recognised in the emergency preparedness literature. Key areas for discussion include; within the superordinate theme of *'self-determination'*, the impact of role identity in

relation to emergency preparedness, including the influence of role perception and the working culture. The importance of developing personal resilience emerged as a key area whilst recognising the significance of providing psychological support for these paramedics. In this study, the importance of *'control'* was visible in numerous aspects of their role including training, planning and the development of safety and trust when dealing with clinical equipment, possibly providing assurance and reflecting the uncertainty and unpredictability of dealing with an unexpected incident. Additionally, within the superordinate theme of '*experience-based practice*', it was evident that these individuals value emergency preparedness experience and practice-based knowledge, and perceive this as a credible and applicable form of knowledge. The preferred method of transferring knowledge, which emerged through these interviews, was through story telling. This transferral of knowledge from real-life incidents occurred both formally and informally, and was perceived as a credible method of conveying experience in a speciality where real-life exposure is difficult for the practitioner to obtain.

9.2 Divergences and convergences

This section considers key areas of divergences and convergences within the sample group of thirteen participants, reflecting the multi-directional relationship between the individual paramedic and the sample group. (appendix 19) (Smith et al, 2009). Data analysis occurred at an idiographic level, as per IPA methodology, exploring in detail the individual lived

experience of emergency preparedness, however distribution of these themes across the sample is now considered.

Within the *'self determination'* superordinate theme, all participants considered their professional role and identity when discussing their lived experience, although there were contrasting views within the *'self-identity'* subordinate theme (section 6.1). In this context, the newly qualified and inexperienced paramedic appeared to perceive them-selves as an *'action hero'*, whereas the more experienced paramedics appeared measured and functional with their professional role determination. These paramedics cited family concerns over safety for their chosen response, with the realisation that others could fulfil their role just as effectively as they could. They also highlighted that emergency response was just one aspect of their role, a reason why they did not need to identify themselves as 'super heroes'. All participants noted that a form of personal resilience is required to function within their professional role; however the paramedics with extensive real-life clinical experience or military experience appeared more stoic about psychological preparation and potential coping mechanisms, perhaps reflecting their previous background and exposure to these incidents and their working culture.

Within the superordinate theme of *'control'*, the paramedics who had undertaken additional emergency preparedness training appeared to demonstrate additional positive emotions of safety and trust with their equipment and training, suggesting that increased training exposure may

provide assurance, control and confidence in their role. All paramedics appeared unclear as to a definition of the term *'emergency'* and elements of the chaos that they may have to respond to. Differing definitions appear to reflect their subjective views from recent training, real-life experience and possible management and teaching roles within the ambulance service.

Within the superordinate theme of *'experience-based practice'*, all participants appeared to value learning through real-life events. Thoughts on how knowledge and evidence is perceived, transferred and utilised was consistent across the sample of thirteen paramedics. There appeared to be recognition across the sample that knowledge and evidence exists in differing formats and it is challenging to apply in the speciality of emergency preparedness, due to the uncertainty of the incident that they may be called to respond to.

All accounts appeared to suggest that within emergency preparedness the individual context is not considered, with a primary focus on organisational preparation and limited acknowledgement of the involvement of each individual health-care professional's personal context and characteristics. All participants discussed the aims of planning and preparation, role and impact at organisational level, however there appeared to be a lack of an individual frame of reference within preparedness. The importance of the individual paramedic within emergency preparedness is considered further within the discussion (chapter 10).

9.3 Summary

This chapter, chapter 9, has summarised the findings. The following chapter, chapter 10, will discuss the study's results in the context of relevant literature, concepts and theory. Chapter 10 concludes with implications and recommendations from this study, including the presentation of the individual dimensions of preparedness and a conceptual model incorporating the individual paramedic within the emergency preparedness process.

CHAPTER 10

Discussion

10.0 Introduction

Chapter 9 presented key themes that emerged from the analysis of data, reporting paramedics' lived experience of emergency preparedness. This chapter will discuss the results of this analysis in the context of relevant literature, highlighting key areas of contribution to the field, including theoretical dimensions of emergency preparedness (section 10.1, page, 278). Practice considerations based on this study are included in section 10.5.1, page 342.

The results are discussed in relation to the study's research questions which are:-

- What is the experience of the paramedic with regard to emergency preparedness?
- What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?
- What knowledge and evidence do paramedics draw on to inform their clinical practice with regard to emergency preparedness?

Using an IPA approach, which enables an in-depth understanding of experience (Smith et al, 2009. Biggerstaff & Thompson, 2008), rich data

were obtained from paramedics regarding their individual lived experience of emergency preparedness. Reflecting the idiographic component of IPA, the participant remains central to this discussion, with their quotes presented in *italics* to illustrate key discussion themes (Wagstaff et al, 2014. Smith et al, 2009. Brocki & Wearden, 2006). In addition, superordinate and subordinate themes, as presented in chapters 6 – 8, will be **bolded** within this chapter. This ensures transparency, linking the transcripts, analysis and subsequent discussion, resulting in a 'chain of evidence', a form of validity checking recognised within IPA (Smith et al, 2009). Using an IPA approach to explore a poorly understood and multi-dimensional phenomena, such as emergency preparedness, enables an in-depth review which deepens the discussion and includes a consideration of the participants quotes, metaphors, imagery and patterns of communication which are an essential component of interpretative phenomenological analysis (Wagstaff et al, 2014. Smith, 2009).

This discussion will place identified superordinate themes within a wider context of literature, using theory from relevant related disciplines, in addition to pre-hospital healthcare. There is very little theory in this latter area, which therefore demands a broader consideration. This link between the individual participant, the interpretation of the researcher and the broader context of the superordinate themes creates a new understanding of the individual's experience, and reflects the hermeneutic aspect of IPA. This dynamic approach reflects an IPA approach that suggests to

"*understand any given part, you look to the whole, to understand the whole, you look to the parts*" (Smith et al 2009; p28).

What follows is the discussion, structured around the research questions.

10.1 What are the experiences, in their role as individual paramedics, of emergency preparedness?

A range of themes were identified that reflect the individual paramedics' experience of emergency preparedness. These themes will be discussed further within this section.

The themes of '**uncertainty**' and '**chaos**' emerged from the transcripts as key components of the individual paramedics experience of emergency preparedness. Additionally, the ability to have '**control**' over the unknown and uncertain elements of a potential incident through preparation, training and the use of specialist equipment was evident. These concepts will now be explored within this section.

10.1.1 Uncertainty, chaos and control

The participants suggested numerous components comprising their personal experience of working within this preparedness role; rather than offering a singular experience of 'emergency preparedness'. Philip, when questioned about what emergency preparedness meant to him, responded:

"*to me? Officially? Or from a Civil Contingencies Act? Business, organisation level?",* highlighting that emergency preparedness has differing meanings at individual, organisational and Governmental level. At an organisational level, there was a sense amongst all the participants that the nature of their emergency preparedness work differed to their routine day-to-day work through its impact on capability, capacity and resources, with Isla suggesting that preparedness was for *"any-thing on a bigger scale"* to a normal response. From an individual practitioner perspective, Edward suggests emergency preparedness is a *"personal and subjective opinion of an incident"*, suggesting that paramedics do not work to a standardised national definition, rather it is localised to their own personal context.

These findings indicate that emergency preparedness is more complex than the literature suggests, with limited definitions of emergency preparedness often given (Boyd et al, 2012. Hammad et al, 2012. Lee et al, 2012a). Definitions in the literature are commonly applied at an organisational level, focusing on ambulance service response, resources and clinical casualty numbers (Boyd et al, 2012. NARU, 2015). There is limited acknowledgment within the literature of the definitions seen in this study at individual practitioner level. This study suggests that an individual's experience is subjective and related to personal context and is comprised of a number of related themes. In addition, this subjective context does not appear to be acknowledged and reflected in the current practitioner preparation, which is standardised in content and delivery. This individual

context and different aspects of experience will be considered throughout this chapter.

The level of **uncertainty** and lack of **control,** within emergency preparedness, that these individuals experience was evident when discussing the evolving terrorist threat (section 7.1.2 and 7.1.3). Philip highlighted the **uncertainty** stating*" we don't know when it is going to happen, we don't know what it is going to consist of, where it is going to happen or how it is going to happen".* Jessica, who appeared resigned to the lack of **control**, suggested that coping with the **uncertainty** reflected individual characteristics, stating: *"that's just down to my personality, I just think if it is going to happen then it's going to happen and it is out of my control and I'll have to deal with it".* The respondents discussed a wide range of previous incidents, demonstrating the range and scope of a potential incident including the IRA threat, the London and Boston bombings and the marauding firearms incidents in Mumbai and Nairobi. Philip stated that *"the terrorists have got the watches and we have the time",* implying that he felt that the terrorists had **control** in these incidents, and the response was reactionary to the incident. This resulted in the participants often feeling powerless in the preparedness phase. This lack of **control**, especially in relation to terrorism, was prevalent in many transcripts.

The experience and impact on the individual paramedic working within a defined threat level are rarely explored. A number of papers describe the evolving terrorist threat in relation to risk assessment (Fischer et al, 2010.

Hausman et al, 2007. Sunstein, 2003), the evolving nature of the threat (Leiter et al, 2012. Omand, 2006), organisational response strategies (HM Government, 2011. Willis, 2007) and roles and responsibilities of the responders (NARU, 2015. HM Government, 2011). Although the risk of terrorism is perceived as uncontrollable and catastrophic (Willis, 2007. Sunstein, 2003), these practitioners appear to actively identify and explore areas where they can gain **control** within their clinical preparation. Exploration of how the general public live within this risk and deal with a constant threat has been specifically explored (Fischer et al, 2010. Mythen & Walklate, 2006), however an important finding of this study is that these health-care professionals, as individuals, also experience an unrecognised lack of **control** and **uncertainty** working within this highly publicised and recognised national threat. It is unclear to what extent their current education and preparation helps them to navigate through these concerns to function in their professional role in the most optimal way, although their current education appears static and unresponsive to their individual experience, not reflecting the fast-changing and evolving nature of this threat and does not appear to address the individual needs of the practitioner within its delivery. The identification and the personal response to this **uncertainty**, in addition to how the individual manages **uncertainty** and **control** do not appear to be currently considered in emergency preparedness training in the way practitioners in this study expressed them.

These practical workers attempted to gain **control** and assurance when dealing with the unknown (section 7.0). An element of **control** appeared to be obtained through their training, their response plans and their clinical equipment (section 7.3). Philip appears to acknowledge the unknown and potential for chaos within his response plans stating *"as I know whatever we do will not be enough in the first hour and a half, two hours"* and Harry considered *" at the start of any incident there is going to be, you are going to have 20 minutes, half an hour of total and utter chaos so you need to encompass them in your plans"*. The acknowledgement of **chaos** within the plan appears informal among practitioners, rather than formalised within the systems response and reflects one method of gaining **control** within a chaotic environment. This acknowledgement of **chaos** within the preparedness plans was unexpected, in contrast to the literature that suggested a degree of certainty through planning (Jones et al, 2014. Ali, 2008. Gebbie et al, 2006). By recognising and identifying the concept of **chaos** as a distinct part of the process appears as a form of coping for the individual worker.

The literature recognises the concept of chaos within numerous areas of health-care (Haigh, 2008. Moore, 2001. Haigh, 2001. Coppa, 1993). However, 'chaos' as a concept is not formally recognised within emergency preparedness conceptual and theoretical models, rather these aim to negate disruption and promote order and certainty by suggesting a response process. **Chaos** is traditionally defined as *"processes that appear to proceed according to chance, even though their behaviour is in fact determined by*

precise law" (Lorenz, 1993, p4). Subsequent academic work adapted the term 'processes' to 'system' in some fields (Haigh, 2002), which reflects more closely the emergency preparedness discipline, where an incident happens and predetermined plans are activated in direct response to what is occurring despite the diversity of incidents. Kosko (1994) suggests a dynamic system is required when working with chaos, which is constantly evolving in response to what it encounters, reflecting the accounts of participants in this study. The suggestion of adaptability within a structure, in addition to a core plan, appears to be necessary within emergency preparedness, where education and response needs to evolve and update to reflect the diverse and ever changing threat, offering individual workers the feeling of **control** over their preparation and clinical practice.

These findings would seem to suggest an individual's emergency preparedness should acknowledge the lack of **control** and potential resultant chaos involved in working within emergency preparedness and responding to an unspecified incident and develop strategies that manage the feelings of **chaos**, enabling the practitioners to feel increased confidence and **control**, in both planning and their personal ability to respond. Through acknowledging these elements and ensuring their visibility within the preparedness plan, it would possibly enable the paramedics to have the perception of **control** within their role and working environment, potentially enhancing their personal confidence and their feeling of personal **safety**.

An additional significant theme that emerged in relation to **control** and **safety** was the **trust** that practitioners placed in both their clinical **equipment** and their **training** (section 7.3.1 and 7.3.2). Edward states *"I found it about trusting your equipment and trusting what you have been told… that is the key thing for me"* to function in a physically and psychologically challenging environment. Jessica implies that clinical equipment is the only 'tangible' thing in this speciality *"you can only rely on what is there, like trust in the equipment".* Significantly, Sally highlights the **trust** relationship between equipment and personal protection, suggesting: *"PPE makes some people feel invincible"*. This unequivocal **trust** of their equipment possibly enables these individuals to attend scenes where there is a risk to their **safety**, however the perception of trusting their equipment could help them manage the chaos. However, perceptions of 'invincibility' could also potentially place these individuals in areas of increased risk if they do not take appropriate care. These findings are consistent with other studies that have highlighted that trust in personal protective equipment increases willingness to work and enhances the perception of personal safety (Arbon et al, 2013. Worrall, 2012). The finding that the trust relationship with clinical equipment is symbolic of **control** and invincibility adds new insight to an important dimension of individual experience.

The participants training also appeared to have a similar role to perception of equipment, creating an assurance of **trust**, and feelings of **safety** and **control**, despite multiple participants being concerned that they were unsure what they were training for. Mary states: *"I feel confident as our*

training is spot on" and Colin *states "our training should make us safer, our monitoring should make us safer".* Their experience of the educational elements of preparedness appeared to offer them reassurance, confidence and **control** to function in a speciality that has multiple uncertainties. Although training appears to make these individuals feel safer, previous literature acknowledges that it is not currently enhanced, evaluated or adapted in an optimal manner to meet the experiences of these paramedics; it does not consider the individual elements identified in this study and is delivered to meet organisational and national requirements (Boyd et al, 2012. Kollek et al, 2009). Future training should be developed which recognises the objects or experiences that individual practitioners associate with perceptions of **safety**, **trust**, confidence and **control**, in addition to the necessary processes of clinical response that the ambulance service requires.

This section has discussed the practitioners' experience of uncertainty, control and chaos in relation to their individual experience. Preparation was suggested as one way of gaining control of uncertainty and the experience of preparation appeared significant to each paramedic. The paramedics' experience of preparation will now be discussed further.

10.1.2 Practical based preparation

All participants had experienced '**preparation**' as part of their emergency preparedness role and it was a visible theme in all thirteen transcripts

(section 8.2). Within the theme of **preparation**, two distinct areas emerged from the analysis. Firstly, the continual anticipatory position that these individuals experience whilst 'waiting' to respond to these relatively rare incidents. Related to this includes the need for the constant readiness in this area, and how this links to education frequency and the need for hands on training (section 8.2.1). Secondly, how these practitioners value practical preparation (section 8.2.2).

10.1.2.1 Preparedness – anticipation and training frequency

The participants noted that education and training are two key areas of preparedness, particularly in a speciality where there is minimal exposure to real-life experience in contrast to other clinical specialities. Education and training appeared critical when in the "waiting state" for an incident, and was highlighted by all participants. Tony acknowledged this, stating *"our primary response… doesn't happen everyday so a lot of what we do is train for it".* During this phase there is a constant anticipation and requirement for readiness, similar to a sprinter in their starting blocks. Tony compares himself to *"a tool ready to get out of the tool box, you have to keep your tools sharp".* However, this *'quiet'* time offers an opportunity for structured training and education to occur (Ingrassia et al, 2014. Alexander, 2007), enhancing their preparedness if and when they are called to such an incident.

Participants spent significant time preparing for the incidents that they are regularly called to, through extensive education and training programmes (Djalali, 2014. Whetzel et al, 2013). In contrast to the regular emergencies that paramedics prepare for, one key aspect of emergency preparedness for the paramedic is the response to incidents that are unpredictable, diverse and provide multiple complexities. In contrast to the predictable emergency, with standard preparation, education and training components, emergency preparedness by its very nature therefore creates challenges in preparation because the paramedic is not usually in a position to predict the type and nature of an incident. This unknown dimension creates training challenges because of the diversity of possible incidents that are resource intensive, often involving multiple departments and agencies, the challenge of simulating this type of overwhelming event and the constantly evolving threat (Cohen, 2013a. Chaput et al, 2007. Ryan & Montgomery, 2005). Currently training is focused on organisational preparation and response, with each individual responder viewed as a component of the team preparations, as opposed to considering the experiences and needs of the individual within the process of preparation, which has emerged as an important but often unacknowledged aspect of emergency preparedness (as described in section 8.2). In addition to preparing for possible incidents by ensuring the correct equipment and protocols are in place, individuals need to prepare themselves for the experience and how they will interact with an unpredictable and potentially dangerous, if not life threatening incident. The way an individual prepares, through education and training, during this

anticipatory period emerged as a key finding in contrast to much of the literature where the focus in primarily on organisational response.

The interviews showed that training frequency is a key theme within **preparation**, with Rob suggesting *"we sometimes get exercitis, where you do too many {exercises} and people get sort of lethargic about it"*. Interestingly, Rob used the suffix of "–itis", reflecting the meaning of inflammation in medical terminology. This suggests a concept where practitioners are exposed to repeated education and training, resulting in a regularity that may impact negatively on optimum individual preparation. In contrast, other participants suggested that training frequency was not sufficient for them, with David stating *"having more experience, rehearsals and training would help"* and they were concerned about their skill recall in the event of a real-life incident. This suggests a need to broaden the concept of training to consider individual perspectives and other aspects preparedness experience identified in this thesis.

Available literature does not suggest an optimum training frequency within emergency preparedness education, however published literature from the resuscitation field, a similar area where staff are being trained for an event that they may have infrequent exposure to, notes that there is a rapid fading of knowledge and complex motor skills, when exposure in real-life is minimal (Deakin et al, 2009. JRCALC, 2008. Young & King, 2000. Cooper & Libby 1997. Moule & Knight, 1997. Lewis et al, 1993. Moser & Coleman, 1992.). Resuscitation clinical skills recall diminishes within 2 weeks after

training and returns to pre-training levels within 1 – 2 years (Hamilton, 2005. Moule & Knight, 1997). This annual time scale is reflective on the mandatory training frequency guidelines within emergency preparedness guidance, possibly resulting in practitioners who are not being optimally trained. The majority of research in resuscitation is focused on the retention of clinical skills (Deakin et al, 2009. Young & King, 2000) and little is known on the impact on decision-making, leadership and human factor skills, which are also important components of emergency preparedness (Boyd et al, 2012. Challen et al, 2012 Cohen et al, 2012. Davies & Hannigan, 2007). Similar studies have not been carried out in emergency preparedness (Boyd et al, 2012. Lee et al, 2012a), suggesting that it is not known whether training content and frequency is at an optimum level and to what extent it meets individual needs (Hammad et al, 2011. Daily & Birnbaum, 2010. Heinrichs et al, 2010).

Emergency preparedness guidance, including suggested frequency of training, appears to be focussed on organisational preparedness rather than individual practitioners educational needs. NHS organisations, including the ambulance service, are required to undertake a communications exercise every six months, a desktop exercise once a year and a major live exercise every three years (NHS England, 2013). Due to the cyclical nature of these events and factors such as leave and normal service demands, only a small number of paramedics will have exposure to these events, resulting in first line responders that have had minimal exposure to emergency preparedness hands on training, and even those staff that are able to engage

in training, may do so on a one off basis which is unlikely to be adequate. It is noted within the guidance that this frequency is 'best practice' and it acknowledges that it 'draws on shared knowledge' and expert agreement (NARU, 2015). However, this guidance document does not appear to draw on peer-reviewed papers and there are no references included within this documentation stating where the prescribed frequency and type of training requirements are derived from. The findings of this section suggest that emergency preparedness training needs to recognise, develop and reflect substantially the individual workers context, rather than the 'one size fits all' approach that is currently being used, to enable individual preparation with the aim of developing the most effective response to a clinical incident.

The next section examines the paramedics' experience of training and preparation, including their preferred methods of learning.

10.1.2.2 Practical-based training

The participants suggest a variety of training methods that they undertake as part of their education programme including real-life exercises, table-top exercises, formal presentations and high-fidelity simulation (section 8.3.1). The participants valued hands on training, with a frequent frustration that they frequently *"got to look at them, not have a go"* (Jessica) in relation to equipment. This possibly reflects the need for them to ensure there is an experiential and practical aspect to their preparedness, reflective of their clinical role (see section 6.1 Self Determination). Despite the discussion on

frequency of training, the participants called for a variety of educational perspectives, incorporating *"practising and practising, rehearsal and hands on experience"* (David), suggesting a primary school education method, where children are tactile in educational approach, rather than just viewing an object on a computer screen which is what many of the participants experienced. There is an important need to explore a full range of approaches to training that consider individual experiences and understand how these might affect the effectiveness of training. Such strategies for improving preparedness so it 'fits' with individual experiences will be an important area for future exploration.

Through the valuing of real-life experience, practical learning and hands on time with equipment, participants in the study appeared to favour live drills and clinical simulation, because they offered them a perception of reality (Ingrassia et al, 2014 Cohen et al, 2012. Shepherd et al, 2010). Although key facts can be learned through table-top exercises and presentations, they do appear to create a theory-practice gap, with little real-life exposure to apply the knowledge learnt into clinical practice. Live exercises are perceived as 'gold standard' in the current context, but they have cost and time implications and can be challenging to organise alongside everyday workloads (Morrison & Catanzaro, 2010). In addition, current exercises focus primarily on organisational resilience and response, rather than improving and evaluating feedback to individual health-care workers (Cohen et al, 2013b), which would enhance their preparation and response. This study suggests the need to redesign these exercises, reflecting the

individual's experience of emergency preparedness, and incorporating these into practical practitioner preparation.

The finding that individuals in this study value regular practical-based education further supports the evidence that demonstrates that high-fidelity simulation use is important within emergency preparedness, but requires adjustment to build in the new findings from this study. This form of simulation offers numerous benefits including, firstly real-life exposure and interaction. Secondly, hands on time with equipment. Thirdly, the opportunity to make decision-making and develop team skills within uncommon scenarios that can be presented and adapted to reflect current events (Boyle et al, 2007. Hynes, 2006. DeVita, 2005). It is recognised that simulation training, with health-care professionals, results in an increase in skill, increased confidence within their role and improved knowledge regarding the given scenario (Hutchinson et al, 2014. Franc et al, 2012). This discussion suggests that formal classroom education is not enough and other components are necessary to develop optimal preparation in this area that build on the individual experience of the paramedic.

Within this group of learners there are multiple learning styles. Although these paramedics suggested that they are practical learners, there were differing preferences in training delivery, frequency, content and environment (section 8.2.1, section 8.2.2 and section 8.3.1). Delivering teaching and education that does not consider the learning style of the individual student can cause frustration, as seen from these participants,

potentially resulting in poor knowledge retention and unwillingness to learn and engage (Manolis et al, 2013. Arthurs, 2007). Kolb's practice based learning, which accounts for an individual context, could be developed as a theoretical base for emergency preparedness training, in this context through clinical simulation, where learning through experience enables the individual to learn, grow and develop reflectively based on personal experience (Bandura, 1991). Kolb states *"to understand knowledge, one must understand the psychology of the learning process, and to understand learning, we must understand epistemology – the origins, nature, methods and limits of knowledge"* (Kolb, 1984, p37). Currently within emergency preparedness, the focus appears to be on imparting information, rather than examination of the individual workers personal context, how they learn, what their preferred learning methods are. An increased understanding and acknowledged of the epistemology of learning in this area has the potential for the development of an improved educational preparedness program (see section 10.4).

Philip suggested that being optimally prepared incorporated three key dimensions; competence, training and experience. Within his example, he questioned whether an individual who has worked within their role for 33 years but had never experienced a real-life incident was more competent than an individual who was new in post but had experienced a real-life incident. He proposed that training was only one aspect of preparedness stating "*he's certified. Is he experienced? That is the 3rd part of the triangle – to be competent…. it is possible to be competent I guess, but it is difficult to*

measure". He explained how individuals could be trained in practical skills but it is challenging to gain experience and measure competence within this area, suggesting that preparedness is more than the generic education that is currently offered at organisational level.

Most health care practice is based on the concept of preparedness, with a tacit assumption that individuals are trained and competent to respond. Whilst preparedness as a concept is poorly defined in (section 1.4.2), participants in this study suggested that components include practice-based education, clinical skills and an understanding of some of the type of incidents that they may be called to, in addition to reviewing planning with a degree of flexibility and adaptability. Whilst these components have been recognised previously (Baack & Alfred, 2013. Arbon et al 2011. Jennings-Sanders et al, 2005), they have been never been considered or applied to the individual workers experience. These findings support the notion that emergency preparedness for health care professionals includes having '*comprehensive knowledge, skills, abilities and actions*' to respond (Slepski, 2005; p421). It is unclear from this definition, and from the participants contribution, how complete preparedness could ever be obtained (Worrall, 2012. Rebmann, 2006), as Sally suggested *"how can we ever be prepared… when we don't know what is going to happen?".* This frustration and awareness of never being able to totally prepared may be an additional element of **uncertainty** that the practitioners experience, in addition to being a possible barrier to engagement in this area and results in emergency preparedness training that is challenging to measure and

evaluate. However as a concept it is rarely discussed in emergency preparedness.

In summary, this section has discussed the important key concepts of practitioner experience that have the potential to impact on the way in which they prepared. In contrast, much of the published literature on emergency preparedness focuses on organisational preparedness and resilience, primarily clinical skills, simulation training and knowledge retention, with a paucity of literature focusing on the experience of the individual worker within this preparedness phase. Significant dimensions of individual experience appeared to be **uncertainty**, **chaos** and **control**. These appear important to the practitioner as they offer personal insight and confidence when engaging in emergency preparedness. Organisational approaches to emergency preparedness need to change to reflect individual needs, rather than only organisational needs and these areas should be considered in future preparedness work.

10.2 What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?

This section discusses the motivations, barriers and enablers for paramedics in engaging in emergency preparedness. Consideration of motivations and barriers needs to be contextualised within an awareness of the paramedics' role as Category One responders (Civil Contingencies Act, 2004), with an essential health-care response role for unexpected incidents

(NHS England, 2014. NHS England, 2013. Day et al, 2010). These incidents are perceived as having an inherent personal safety risk to the health-care worker as a result of the unpredictable and uncontrollable pre-hospital environment. Additionally, these responders may be attending to a large number of casualties, many critically injured, with a potential impact on their psychological resilience. There is currently an expectation that the individual will respond, as part of their rescuer role to any incident (NARU, 2015. Civil Contingencies Act, 2004). This expectation appears to have been made without an understanding of the individuals' motivations or barriers for involvement (Jones et al, 2014. Smith & Hewison, 2012. Stevens et al, 2010), which are key to planning for effective emergency preparedness because preparation needs to be developed and delivered to ensure optimal response (Khalaileh et al, 2012. Hammad et al, 2011.). There are examples where there is an internal conflict between professional role and personal willingness to work, which may affect response (Arbon et al, 2013. Baack & Alfred, 2013). This means barriers to engagement need to be identified and understood to ensure that individual emergency preparedness education, training and knowledge is delivered and received in a way that fulfils the potential for emergency preparedness.

The concepts of role determination (section 6.1.1 and 6.1.2), working culture (section 6.1.2 and 6.1.3), willingness to work (section 6.2.1) and the impact of safety (section 7.3) emerged as key areas that impact on paramedics engaging in emergency preparedness. They each influence the individual and can be viewed as a motivation, a barrier and/or an enabler

when engaging in emergency preparedness. Each will be explored further within this section.

10.2.1 Professional role identity

The concept of professional role identity appeared prominent within the interview transcripts (section 6.1). Participants described how they perceived themselves as '**action heroes**' and 'superhuman', using related phrases such as 'exciting', 'adrenaline filled' and 'buzz-filled' to describe their professional role in relation to emergency preparedness. These individuals appeared to value this role identity, and use it as a motivator to work.

Related to personal role identity is the nature of the work that these paramedics are training for. They appeared to value the diversity and unpredictability of the incidents, with multiple participants favourably comparing this work with 'routine' office work. There are suggestions that routine work is '*mundane*', '*monotonous*' and '*boring*', in contrast to their role. Jessica highlights the uncertainty, as an aspect of the role that she particularly enjoys, stating, *"I like the fact that you got to work not knowing what you're going to get".* From these descriptions, it would appear that these paramedics days are full of action, but contrastingly Isla notes *"we just do run of the mill things, just waiting {emphasised}, in case"*. This suggests that the reality of their day is perhaps different to how they perceive and present their role. Their perception of the nature of their work, in contrast

to the reality of their day to day work, appears important to their '**action hero**' self-identity and their motivation to work.

It was significant that this potential "unpredictable" and "challenging" environment that these paramedics are expected to function in was mentioned within all the transcripts. Phrases such as *"challenging"*, *"taxing situation"* and *"physically demanding"*, linked with expressions of *"adrenaline rush"* and *"adrenaline buzz"* were present throughout the transcripts, suggesting that the personal psychological and physical challenge was a key personal motivation to prepare and work in this area. Deci and Ryan (2002), suggest, within their self-determination theory, that as a motivation for personal growth, individuals seek challenges. This personal challenge may be a motivator to work in this area and may be an important consideration when considering individuals' suitability to work within the demanding clinical role.

Self-identity theory is acknowledged in multiple disciplines, including humanities, psychology and cognitive science (Horowitz, 2012. Van Petegem et al, 2012. Ciani et al, 2011. Wagner et al, 2009). The concept of self-identity is complex and multi-layered, reflecting the multiple roles that an individual undertakes (Clarke et al, 2014. Ciani et al, 2011. Pajonk et al, 2010). Theoretically, this is represented as a *person schematization,* which is unique for each individual and reflects not just their personal and professional roles, but also their individual experiences from the past, present and also their future (Wagner et al, 2009. Horowitz, 1991). The

schemas contributing to this identity can occur both consciously and unconsciously, and as a result are not always recognised by the individual (Horowitz, 1998). The uniqueness of contributing characteristics of each individual is important to appraise when considering how these paramedics prepare and work. By way of illustration, a paramedic could perceive themselves as a father, husband, son, paramedic but also the influence of their past student experience, social experience growing up and other contextual factors impact on their individual schematization, resulting in a constantly evolving identity rather than a static professional role label. This was visible within the transcripts, as participants discussed external influences on their professional role including personal characteristics, family life, past working experiences and personal hobbies and yet was rarely acknowledged within formal emergency preparedness documentation such as policy and guidance (NHS England, 2014. NHS England, 2013).

There appeared to be a divide in self-identity among participants across the sample. There was an emphasis on being an action hero at work but contrastingly Sally noted: "*we are just normal people who have been trained completely differently to how most people are"*. This finding is in agreement with Horowitz (2012) who suggests that the concept of self-identity is not static, and changes depending on the setting that the individual is currently in. These changes in presentation are expressed through the individual's choice of language, metaphors, posture, gestures and gait in differing contexts. On reviewing the reflective research diary (section 3.9), the

participant's persona changed by demonstrating a more relaxed body language and tone when talking non-work related issues and external influences such as family members. In contrast, when discussing their response role, the participants portrayed themselves as being physically active, challenge loving and highly motivated by the way they sat, moved and gestured. Additionally, metaphors such as *"swinging through trees"* (James) to describe the adventure aspect of the role were used. This observation may be due to a self-representation as an action hero within their professional role, with physical attributes being a valued identity trait to these individuals.

Contributing to their personal schematization further, subconscious messages can be received and processed from numerous sources (Person et al, 2013. Fannin & Dabbs, 2003), including mainstream and social media, working culture and their friends' perception of their role. These subconscious messages continue to feed into their identity, evolving how they identify them-selves internally and externally. The description of **'action hero'** within the transcripts may reflect these external influences, as the description appeared to describe an action-hero film character. The concept of self-identity and individual schematization may reflect the participant's role persona as action heroes, identified within this study, reflecting internal and external influences on their role.

The shared professional identity of being self-motivated, action orientated and easily bored is not surprising, and appear comparable to the concept of

'rescue personality' (Mitchell & Bray, 1990). They were all interviewed in their role as paramedics with their *"occupations reflecting expressive components of personality"* (Holland, 1985; p173). Pre-hospital workers exhibit two key groups of characteristics; firstly, a concept of 'enterprising', incorporating attributes of adventure loving, energetic and being optimistic. Secondly, a concept of being 'social', including attributes of being cooperative, helpful and responsible (Fannin & Dabbs, 2003. Holland, 1973). Interestingly, within this study, the paramedics appeared to address the 'enterprising' concept with little consideration for the 'helping' aspect of their role. A probable explanation is that emergency preparedness is different from routine health-care work, where the focus is on the one individual patient. Within an emergency preparedness response, there is a focus on managing the scene and dealing with multiple casualties, almost in a robotic manner (described in section 6.2.1), possible removing the traditional health-care responder, empathic element of their role.

The findings from this study enhance our understanding of how these individuals perceive themselves, and how their identity of being physically able and engaging with physical challenges may be an important motivating factor in their experience of emergency preparedness. The concept of understanding the professionals' role perception as a motivator to work within emergency preparedness has not previously been discussed and should be considered when developing preparedness programmes, because it has the potential to impact on a realistic evaluation of this clinical role.

10.2.2 Working culture

In addition to individual personality traits, participants' suggested that cultural aspects of professional working within the ambulance service influenced their emergency preparedness experience (section 6.1.2 and 6.1.3). Many of the participants described how they, or their colleagues, entered the ambulance service from a military career, and described how the military experience impacted on the current paramedic role. Sally described this: *"you can definitely tell who has done what and has what background and who has what experience".* This was evidenced through the use of functional language, protocol based practice, using abbreviations in communications and a stoic manner of dealing with incidents that are personally upsetting. Also, the military background was reflected in the hierarchical structure that exists within the ambulance service, which functions with clearly defined roles and responsibilities (NARU, 2015). These components of work suggest a sub-working culture, specific to the ambulance service. (Evans et al, 2014. Kilner, 2004b). Understanding and acknowledging this sub-culture and the impact that this has on the individuals working within it is important to consider when training, educating and considering the motivations of practitioners in emergency preparedness.

Organisational culture, impacting the individuals working within it, in health-care is a recognised concept (Person et al, 2013. Schein, 1996. Hatch, 1993), described as *"the set of shared, taken for granted, implicit*

assumptions that a group holds that determines how it perceives, thinks about and reacts to various environments" (Schein, 1996; p 236). This definition reflects the findings of this study, which highlighted the participant's perception and reaction to their environment (Section 6.3)

Relatedness to others, offering a sense of personal security, identity and connectedness to other individuals, through a professional role is common. (Ryan & Deci, 2002). However, this feeling of belonging may encourage passivity, resulting in the individual workers undertaking routines and rituals like their peers without personal decision-making (Barnett, 2009. Vu and Dall'Alba, 2011). The strong relatedness, through a working culture in the area of emergency preparedness, reflects previous findings in other health-care disciplines (Clarke et al, 2014), where individuals felt a pressure to undertake existing practices and role modelled on their professional peers. It was also noted that when they adopted and applied their own personal identity and context, in addition to their professional identity this resulted in increased autonomy, increased role confidence and motivation. This finding has an impact on the development of training, where professional identity is currently emphasised but individual identity appears to have limited recognition both at individual level and at a collective level, in terms of drawing on our knowledge of experiences of emergency preparedness to inform practice. Recognising the individual, through reviewing their personal motivations for their role, within emergency preparedness training may be a method of developing increased

confidence, motivation, and autonomy, enabling an adaptive and independent clinical practice.

Whilst the role perception and role identity appear important to the paramedic, it is unclear if these role attributes were present before joining the ambulance service, or were developed as a result of them being within the culture. These role attributes included aspects of physical role, personal resilience, dealing with unpredictable situations and being flexible and adaptable under pressure. Multiple participants expressed this 'chicken and egg' notion, noting *"and part of that is are you in the profession because you can cope and are the type of person that can cope with it or have you got that personality because of what you have been exposed to? It is probably a little bit of both".* (James). The need to consider the predisposition of these individuals before they join the ambulance service and within paramedic training, and the impact that emergency preparedness experience has on them in their role is an important finding of this study.

The published literature examining role identity appears to generalise key characteristics and attributes across the professional group. However, the individuals working within it may have differing contextual circumstances and motivations for working in this area. Noting the individual perspective is a central element within an IPA study. Training, education and preparation cannot occur at a homogenous group and a cultural level; rather it must consider the differing individual needs within this group, and adapt and personalise the content and delivery to reflect their individual

requirements. Building on reflexivity and recognising the individual within the training schedule could enhance emergency preparedness education.

In summary, currently emergency preparedness occurs generically and in a standardised manner, with little consideration for the individual responders motivation to engage with this area. It focuses on the practical nature of the role, with the aim of functionality and response, playing to the '**action hero**' culture and emergency service sub-culture rather than accounting for the individual needs that these paramedics may have. Personal context and past experience need to be considered, in addition to role attributes, during the preparedness phase. Role identity and the nature of their work appears important to the participant, and this 'rescue and action hero' appears a significant motivator to work. In addition to the impact of role and culture, other attributes contribute to role identity including family and previous personal and work experience.

Mandatory education and training is a key component of the emergency preparedness experience for the paramedic (Boyd et al, 2012. Hammad et al, 2011). Whilst education and knowledge is an important aspect of this preparedness, it has a limited impact if the individual paramedic is unwilling to respond to a real-life event. The concept of 'willingness to work' is recognised within the health-care literature (Rutkow et al, 2014. Arbon et al, 2013. Balicer et al, 2010), and suggests some potential barriers for individuals engaging in the area of emergency preparedness. Key

components of this concept will now be examined in the context of the participant's experience.

10.2.3 Willingness to work

Whilst the majority of participants took on the **action hero** role, there were some reflections on the individual impact of these working conditions, in relation to safety and personal capabilities, with Edward suggesting, in the context of personal safety that *"you are not going to be a superhero"*, highlighting the understanding of personal risk and safety when responding to a potentially dangerous incident.

The literature recognises that multiple factors affect health-care workers willingness to prepare and respond to these overwhelming incidents that potentially impact on personal safety. These include personal demographics, family influence and workplace factors (Arbon et al, 2013). Inherently, paramedics have a high baseline level of response willingness (Rutkow et al, 2014. Barnett et al, 2012. Balicer et al, 2010), with an understanding when they join the ambulance service of the role that they may undertake. Smith & Hewison (2012), through their narrative synthesis, noted that there is a dichotomy within preparedness, and responders who feel prepared to respond are not always willing to respond. Some of the factors identified in this study, related to motivation to respond, are now examined.

A recurrent interview theme was the requirement of training to develop trust and confidence in their equipment and clinical skills (presented in 7.3), resulting in a practitioner that feels confident and knowledgeable, and this then related to an increase in willingness to attend a real-life incident. For example, Mary stated, *"I am confident in what I trained in so we are all ready to go to any job and we are all confident and we are all happy".* Other participants reflected Mary's statement by suggesting that education gave them 'confidence', 'security' and '**trust**', interpreted in this study as an element of **control** in their work, which enables them to fulfil their professional role of first responder. Interestingly, Mary speaks as a collective, utilising the word 'we' three times within a short statement. This may reflect the generic and group training that is currently in place, which looks at organisational preparation as a collective, rather than considering the individual members working within it. Sally suggests that training is the element that impacts on their ability to function and respond in this environment when she states, *"we are just normal people who have been trained completely differently to how most people are"*. This implies that the training and education is the component that enables these individuals to go into situations that untrained members of the general public are running away from.

Perceived lack of emergency preparedness education and training is a recognised barrier for paramedics' engagement in this speciality. Preparedness is vital in an area were there is an expectation of response, but they experience minimal exposure in real-life, due to the scarcity of

these overwhelming incidents (Cohen et al 2013b. Franc et al, 2012. Murad et al, 2010). However, training is resource intensive in both time and manpower and can deflect these resources away from day to day healthcare demands (Powers, 2007. Cohen et al, 2001). The aim of paramedic education in this area is to ensure that knowledge and clinical skills are up to date, to develop personal characteristics to deal with unexpected mass casualty events, for example, decision-making and tactical capabilities, and to ensure each individual paramedic can perform competently within their role (Cohen, 2013a. Goodhue et al, 2010. Ferrer et al, 2009). Furthermore, effective education can increase healthcare workers willingness to work during an event where they perceive personal risk (Jones et al, 2014. Stevens et al, 2010. Smith & Hewison, 2012). However, this education does not account for individual experience.

Personal safety appeared a key dimension of their role in relation to their willingness to work, with conflicting views offered. There appeared to be a denial of the safety risks of their role with Isla suggesting that in relation to personal safety *"no… we don't really discuss it"*. Sally acknowledged that the concept of unpredictability that previously was noted as a motivator in this role actually was a potential barrier when she states, *"the things that scare me are the things that are unpredictable and chance".* All the participants believed that training for unpredictability was challenging due to the numerous unknown factors.

Not surprisingly, personal safety is a key issue in emergency preparedness and numerous studies have addressed the risk to the individual worker and how this impacts on their willingness to work (Ki & Maria, 2012. Barnett et al, 2012. Arbon et al, 2011. Considine and Mitchell, 2009), although this relationship and impact is recognised, it is not considered at an individual level, with strategies to formally recognise this dimension of experience. There may be a need to create further clarity on this area as this study identified differing perspectives, resulting in a need to explore this further.

The impact of the paramedic's family on the individual's role and their willingness to work is presented in two ways. Firstly, the role perceptions of family members appeared to be from the media and television dramas with Sally stating that *"my Mum imagines that I am running into terrorism, like the London bombings every day".* This appeared to cause some frustration with the participants as they contrast this with reality of their routine training schedule. Isla offered an example by saying *"they don't see the day to day, they don't see the run of the mill, just waiting"*. The sense of concern, and the subsequent impact that their family members have for them, working in this environment appear to be a barrier to engagement for some individuals. It appears significant that this concern is visible when related to their family members and their professional role. This was particularly apparent when the paramedic had family members with young children, such as Isla who states *"I've got a family and stuff to look after so to put yourself into more situations then you need to be in. I probably wouldn't"*. She suggests that she would fulfil her role, however it would not go beyond the scope of her

training, due to personal risk. This perception of personal risk, in relation to her family is potentially a barrier to engagement within this speciality and is rarely recognised.

Family and personal context has a correlation with willingness to respond (Smith and Hewison, 2012. Arbon et al, 2013. Damery et al, 2009. Basta et al, 2009. Mackler et al, 2007. Ehrenstein et al, 2006). Literature from North America suggests that healthcare responders who acknowledge this as a factor in their role and who produce a family disaster plan are up to eight times more willing to respond (Arbon et al, 2013). No U.K. based literature examines how positive, pro-active actions regarding family members can enable engagement of paramedics in their role, but it is evident from these findings that the practitioners decision to engage appears potentially more complex than current training has identified.

In summary, current paramedic preparation, including education, is delivered in a standardised format and is limited in terms of mandatory training cycles, delivery methods and generic content, and appears not to incorporate the individual dimensions identified in this thesis. There is an expectation that these first responders will undertake this role as part of their job, as a form of organisational response. Consideration of individual preparedness, personal context and experience should be considered within future preparation, as currently there is a large workforce 'prepared' to respond to a potentially dangerous incident, with a presumption that they will respond but little awareness of the complex conditions that act as

barriers or enablers to their response. Further research is required to explore the most optimal method of embedding these factors in recruitment, training and evaluation, although initial suggestions are made in section 10.5.

The next section discusses how the individual paramedics personal resilience impacts their motivation to engage with their emergency preparedness role.

10.2.4 Personal resilience

Paramedics potentially work within an environment that impacts on their personal safety due the nature of the incidents that they respond to. In addition to the physical demands of these incidents, they also provide emotional challenges due to the exposure to a large patient group who may be critically injured or dead. Within this context, participants' responses are examined. Firstly resilience as a concept for emergency responders will be explored, with discussion focusing on the coping mechanisms that these individuals use, examining the challenges of psychologically preparing an individual to deal with an overwhelming event (section 6.2).

The participants highlighted the need for individual coping mechanisms to deal with these incidents, both in simulation and in real-life with James stating: *"even the most cold-hearted clinical person in the world, it would be likely that they would have some kind of feeling towards that, emotion*

towards that… so it is going to be difficult". Significantly, a number of participants suggested that *"we are not robots"*, and spoke of how they are expected to separate the physical and psychological aspects of their response, to enable them to cope at the time in an automated manner. This concept of processing casualties in a mechanical manner is recognised in Boyles (2005) work who suggested emergency workers "develop a veneer" and use "tunnel vision' to enable them to cope. This approach to coping appears intrinsic to the individual, as an on-the-scene coping mechanism and is not part of a formalised preparedness plan.

Another form of decoupling of physical and psychological response is articulated by Sally who suggests that *"you almost have to dehumanize the patients"* when dealing with multiple casualties. She suggests that this dehumanisation is different to what is used in routine emergency response by these workers, and enables her to cope with these more extreme incidents. Again, this emotional detachment is recognised by Boyle (2005) whose research participants suggested that they had to view patients as objects and "a piece of meat" to enable them to cope. Again, this coping mechanism appears to be an informal and individualistic manner of coping, rather than a formal skill that is recognised and considered within preparedness education.

Within their clinical role, paramedics are expected to manage their emotions to enable them to respond, manage and treat their causalities (Fjeldheim et al, 2014. Williams, 2013b. Mitmansgruber et al, 2008. Jonsson

& Segesten, 2003). An aspect of their routine role is often termed 'emotional labour' as a description of their strategies used to manage personal and their patients' emotions (Williams, 2013a. Williams, 2013b. Boyle, 2005). It could be considered that this emotional labour changes or increases when their work moves from a routine call, with a singular patient presentation to an unexpected mass casualty incident (Jonsson & Segesten, 2003), with multiple casualties. Further research is required to establish if emotional labour strategies can be identified and formalised to enhance the personal resilience of individuals working within emergency preparedness.

Current emergency preparedness education does not appear to consider psychological preparation in the way identified in this study. David's experience supports this: *"the psychological side has to come second and treatment comes first"* and Isla notes, *"I've not really thought about the psychological training before, to be fair, training is clinically based, triage based, making sure we understand what we have to do"*. Current preparedness education focuses on a medical model of response (Sandström et al, 2014. Tichy et al, 2009. Williams et al, 2008), with the aim of educating first responders on clinical skill development, the use of clinical equipment, clinical protocols and logistics (Caroline, 2008. McKenna & Saunders, 2007. Greaves et al, 2006). Whilst this clearly should be the case at a real-life incident, consideration of how the individual experiences this emotional aspect of the role needs to be reviewed within the preparedness phase, to ensure optimum preparation and minimal long-term psychological harm to these individuals.

All the participants acknowledged the need for personal resilience within emergency preparedness (described in section 6.2). Resilience is an important aspect of paramedic practice, and can be defined as *"the capacity to recover from extremes of trauma and stress"* (Truffino, 2010; p145). In application to emergency preparedness, resilience is *"the finding that some individuals have a relatively good psychological outcome despite suffering risk experiences"* (Rutter, 2007). This concept of risk experience is important in this context, as the aim of preparation is not for these individuals to avoid a negative experience, rather to equip them with the skills and provide support for them to cope with the experience. The lack of acknowledgement of psychological aspects of emergency preparedness was a recurrent theme in the interviews, with a sense amongst the participants that this area is not currently considered or delivered as part of their individual preparedness. How an individual psychologically prepares and develops personal resilience is an important issue highlighted in this study, with practice and future research implications.

In addition to the psychological aspect before and during a response, these participants also reflected on the psychological impact after responding to an incident (section 6.2.4). The complexity of paramedics presenting with PTSD was highlighted by Rob, who stated *"it is some-thing that you don't know if people are going to have, and I know it could be some-thing pretty simple to set it off. I don't think that people are prepared for it initially and for the experience that they have afterwards"*. The participants acknowledged

that they were aware of PTSD in relation to emergency preparedness, and one individual had seen a presentation in their work colleague. However, there appeared to be a consensus that the ambulance service did not consider this a priority with Harry stating that he was relying on a *"back-up plan for us…. to sort us out after"* and Edward stating: *"If I'm honest, I don't think the ambulance service considers your mental status at all, I think there is a big thing at the moment about traumatic depression and things like that and it is usually factored around the armed services"*.

In contrast to the lack of evidence regarding psychological preparation of paramedics within the emergency preparedness phase (Williams, 2012), there is significant discussion regarding the long-term presentation of depression and PTSD within the emergency services, and how this diagnosis can be confirmed and managed (Alden et al, 2008. Fullerton et al, 2004. Jonsson & Segesten, 2004. Jonsson et al, 2003), although there is a limited amount of published literature focused on psychological preparation and also psychological models that predict or can modify disaster preparedness resilience in individuals (Percy et al, 2011).

Paramedics who are exposed to these sudden and overwhelming events are at risk of Post Traumatic Stress Disorder (PTSD) (Berger et al, 2007. Laposa et al, 2003. Jonsson & Segesten, 2003). The presentation of symptoms can be unexpected and occur after a period of time from being exposed to the event. There is recognition of PTSD with this group of healthcare professions (Fjeldheim et al, 2014. Rauch et al, 2010. Berger et al, 2007.

Laposa et al, 2003. Hammond & Brooks, 2001), with an increase in signs of mental health issues amongst police, fire and ambulance staff (Fjeldheim et al, 2014. Alden et al, 2008. Ward et al, 2006). In addition, a pre-disposing diagnosis of depression can increase the workers risk of PTSD (Drury et al, 2013. Alden, et al, 2008. Fullerton et al, 2004), along with the use of drugs and alcohol (Donnelly et al, 2008). Additional individual factors are noted, including gender, previous medical issues, constant exposure to distressing incidents and support factors at work and home (Berger et al, 2007).

Recognising that individual context has an impact on personal resilience is important to note in a study examining individual experience, and is highlighted within multiple transcripts. James notes how individual personality is critical to coping: *"and part of that is are you in the profession because you can cope and are you the type of person that can cope with it or have you got that personality because of what you have been exposed to"*. Whilst it is recognised that individuals interact differently with stressful events, dependent on their personal meaning, current psychological status, past and current experiences (Adelman & Legg, 2009. Matheson & Hawley, 2002), this individuality does not currently seem to be considered at any stage of psychological support offered to these individuals, resulting in individuals seeking support from their peers when they feel appropriate, rather than a formalised system that acknowledges this potential need.

Psychological preparation in this area is challenging due to the unknown factors involved in these incidents, the traumatic nature of injuries and the

overwhelming number of casualties that is difficult to simulate. Some participants felt that it is impossible to psychologically prepare with Isla stating, *"I don't think any-thing could prepare me for that to be honest I mean, even when you simulate it, it's hard as it is not real… so you can't"*. Harry supported this, with his thoughts on the overwhelming and traumatic nature of these events when he states, *"as prepared as you could ever be for something like that, what could be potentially a thousand people injured, screaming, blood every-where, bits of bodies everywhere, it would be just like a war zone"*. Significantly David believes that preparation and coping reflects individual attributes when he states, *"I don't think that you can ever prepare for the psychological side. That comes down to character*".

Current preparation does not focus on psychological aspects of the role, despite the literature recognising the impact of the nature of this work on the individual (Williams, 2012. Percy et al, 2011. Carmona, 2007) and the findings of this study. Numerous reasons exist for this. Firstly, psychological preparation for an unpredictable and potentially overwhelming event is challenging. Content is delivered to groups of paramedics and does not recognise the individual context, which could differ according to the age, previous experience, generation of worker and personality type. Secondly, it is challenging to measure optimum preparedness in this area. Unlike a clinical skill or practical competency where you can simulate and assess performance and response, psychological preparedness is often not known until after an event.

Whilst the separation of physical and psychological response are recognised coping methods, suggested by the participants, it appears that these are not taught or considered in a formal way at organisational level, but are rather suggested, via reflection, at an individual level during these interviews.

In summary, this section explores key factors including role identity, working culture and psychological preparation that impact on the practitioners' motivation to engage with emergency preparedness. The next section considers the knowledge and evidence that paramedics draw on to inform their emergency preparedness clinical practice.

10.3 What knowledge and evidence do paramedics draw on to inform their emergency preparedness clinical practice?

In addition to the experiences of preparedness, a key dimension of experience to emerge from this study is how paramedics value and utilise '**experience based practice**' as clinical practice knowledge and how evidence and knowledge is transferred and applied in an emergency preparedness context.

10.3.1 The role of evidence

Paramedics did not appear to draw on formal evidence, unlike other clinical areas where evidence-based practice is the norm, reflecting the evidence-based health care movement where practice is predicted on the best

evidence (Sackett et al, 1996). Instead practitioners suggested that emergency preparedness practice is often a "*best guess*" (Tony) and is "*made up as you go along"* (Jessica), perhaps reflecting the very limited literature in this area (Ranse et al, 2014. Stratton, 2013. Challen et al, 2012), and the value that these practice-based professionals place on real-life experience (Challen et al, 2012). The acknowledgment of individual clinical expertise and experience, which is not currently reflected in emergency preparedness literature, is an important concept that will be explored further within this chapter, in the context of the practitioner's interviews.

Evidence-based practice is a fundamental component of health-care, with established frameworks in medicine and nursing (Rycroft-Malone et al, 2004b. Harvey et al, 2002). Within these disciplines, practitioners and health-care organisations routinely seek out research evidence to ensure up-to-date and optimal patient care decisions. It is necessary here to clarify exactly what is meant as evidence base. Traditionally, this evidence would be derived from research (Polit & Beck, 2008. Sackett et al, 1997). However this is problematic in area such as emergency preparedness where there is a lack of standardised definitions, concepts and the majority of published literature is retrospective event reporting. A common definition, applied within a health-care context, is that evidence-based practice is *"the conscientious, explicit and judicious use of current best evidence in making decisions about the care of the individual patient. It means integrating individual clinical expertise with the best available external clinical evidence from systematic research"* Sackett et al (1996; p71). This definition

highlights clinical evidence as important, but it does not appear to consider individual experience. However more recent definitions recognises the importance of experience, including practitioner and patient-based experience, as a form of evidence (Staniszewska et al, 2014. Powers, 2009. Rycroft-Malone et al, 2004a. Rycroft-Malone et al, 2004b.). Emergency preparedness evidence differs from Sackett et al (1996) definition in a number of important ways. Firstly, peer-reviewed publications that underpin emergency preparedness are sparse, with evidence appearing to be obtained ad hoc rather than through systematic research and this knowledge is rarely formalised. Secondly, individual clinical expertise in emergency preparedness is challenging to obtain due to the rarity of 'real' incidents. This finding has important implications when examining the current limited formal evidence base, which does not appear to consider the individual experience, resulting in clinical practice built on a *"best guess"* (Tony) and personal intuition.

This study suggests participants appear to value experience and clinical protocols more than traditional forms of evidence, which is sparse in this area (section 8.3.1). A variety of perspectives were expressed as to how these protocols were related to a traditional evidence-base. Sally and Edward were representative of the sample stating, *"I do believe that all the policies and procedures we work by are evidence based, but I wouldn't know."* (Sally) and *"I don't know if the SoPs are developed from an evidence-base".* (Edward). This lack of connection between protocol and evidence demonstrates a sense amongst interviewees that academic research has

minimal value and impact on their clinical practice, supported by Isla who states: *"a lot of the time it [research] tends to get dismissed".* The practitioners' emphasis appeared to be on their clinical policies, with Rob stating: *"we have our own set of policies. We have a big policy and every-thing. The evidence-base [sighs], I'm not overly convinced where it comes from".* This lack of understanding of the value of an evidence-base was common, with a view that research was not relevant to them and could not be interpreted or applied to their area of work. As one interviewee said "*how can an evidence-base prepare us when we don't know what is going to happen?"* (Sally). This perception may be due to the relative development of paramedic training, resulting in a lack of value placed on research evidence and also the infancy of emergency preparedness as a recognised speciality and the challenges of conducting research in this area.

The findings reflect the limited evidence base (Stratton, 2014a. Ranse et al, 2014. Stratton, 2013. Challen et al, 2012. Lee et al, 2012a. Powers, 2009). Relevant evidence is presented in chapter 1 of this thesis, where it is acknowledged that the published literature and policy is primarily based on opinions, personal anecdotes, reflections and descriptive accounts of past events (Ranse et al, 2014. Chiarella, 2011. Moynahan, 2011). Whilst this "expert" opinion offers some insight into the speciality, further understanding of how paramedics view, use and apply knowledge in this area is required to create, support and form a knowledge base that positively impacts on clinical practice (Stratton, 2014a. Ranse et al, 2014. Stratton, 2013. Challen et al, 2012. Lee et al, 2012a) and a conceptualisation

of what evidence should look like in this area. An implication of this finding is the need for paramedics to be educated and engage with research in this area, to develop a more formalised approach towards research evidence and to use this formalised evidence in addition to other forms that evidence that they value. It also creates a need for the emergency preparedness community to deliberate the nature of evidence that should underpin practice.

The practitioners appeared to value practice generated knowledge (section 8.3.1), which will now be discussed further in the next section.

10.3.2 Practice-based knowledge

In contrast to valuing or considering traditional evidence, these paramedics appeared to develop their own evidence base through personal experience or experience of their professional colleagues, reflecting concepts such as tacit knowledge in nursing (Meerabeau, 2006. Herbig et al, 2001. Eraut, 2000.). The theme of practice generated knowledge was consistent in all accounts, with a common view that *"it is the aftermath of analysing that event, that generates a little bit of evidence and a little bit of learning"* (Ben). There was a sense amongst participants that clinical practice evolves through individual paramedics reflective experience, with Edward stating, *"it all develops from major incidents from the past and people have reflected over different incidents on how things could be changed for the better*". There was a sense amongst participants that practice-based knowledge is credible,

with Isla suggesting, *"if they can get more paramedics then they're the ones that get listened to"*. This reflective and practice-based knowledge is recognised as one type of evidence base for clinical practitioners (Rycroft-Malone et al, 2004a. Rycroft-Malone et al, 2004b). Professional craft knowledge reflects the practice context and the intuitive knowledge that these individuals use (Staniszewska et al, 2014. Titchen, 2000), however current training and emergency preparedness does not appear to recognise this.

Expert practice is recognised as a form of evidence within nursing and medicine and would appear to be an important form of knowledge for practitioners working within emergency preparedness, as it allows adaptability and *"an attunement to the situation that allows responses to be shaped by a watchful reading of the [patients] responses without recourse to conscious deliberation"* (Benner et al, 1996, p 143). This adaptability is vital in an uncertain area and the notion of reflective learning is seen as credible and valuable to these practitioners due to the cultural context and sharing of experience. Currently, recognising expert practice within emergency preparedness does not occur formally, but acknowledgment of expertise may be an important consideration for future development.

The interviews highlighted how these individual paramedics perceive and value evidence differently to academics and those from the scientific community (section 8.3.3). From the interviews it was concluded that they valued real-life experience and practice-based knowledge, compared to

academic research studies, and they found minimal value and application of more traditional research studies feeling that these were ‘out of touch’ with the day to day work that they were engaged in. Despite this they often felt that practice is a best guess and made up in response to the incident that they encountered. These findings have important implications for developing a respected evidence-base, capturing experience both formally and informally in a format that paramedics perceive as credible, usable and transferrable to practice.

10.3.3 Story-telling as a conveyor of experience

The way in which practitioners develop knowledge to inform practice and implement knowledge in practice has been the subject of extensive discussion in many areas of healthcare practice, with many potential methods of dissemination identified (Fey et al, 2014. Misak, 2010. Greenhalgh, 1999). In this study, one key way in which paramedics in this study identified and shared important knowledge to inform their practice was through **story telling**. (section 8.1) This reflects other areas of healthcare practice where narrative based forms of communication are vital carriers of information (Arjmand, 2012. Moon & Fowler, 2008. Schwartz & Abbott, 2007). However, in the field of emergency preparedness, this took on a more significant role, because the practitioners often prepared themselves in a context underpinned by a relatively poor evidence base, from which they could not draw on evidence to inform their practice. This is maybe a result of this field being relatively new and evolving and the

difficulty of undertaking traditional forms of research that require a planned intervention at a set time, in a controlled way.

Storytelling was important because participants describe the emergency preparedness evidence-base as being primarily derived through **learning from real life**, with Edward suggesting, *"people have reflected over different incidents on how things could be changed for the better"*. These first-hand accounts and reflections appear to be shared with other practitioners through the mechanism of **storytelling**, where they can be learnt from and applied, where appropriate, to their own clinical practice.

Story telling enables the individual to *"connect our actions to our thoughts and emotions, and enables us to imagine new possibilities and find moral grounding in sometimes uncertain circumstances"* (Shank, 2006, p 713). In health-care settings, it is often thought of as a verbal and written process, however historically the concept originated in the form of artwork and drama, before the development of the written language. (Schwartz & Abbott, 2007. Yoder-Wise and Kowalski, 2003). It encompasses various formats, including verbal, written, music, drama and cartoon and can occur both formally and informally (Fowler & Moon, 2007), with the aim of conveying a message to an audience.

In a health-care setting, storytelling aims to make clinical practice more visible (Koch, 1998), contextualise human experience by the sharing of experience, (Fowler & Moon 2007. Schwartz & Abbot, 2007. Shank, 2006.

Bowles, 1995. Bruner,1990. Benner, 1985. Labov 1967) and is a method of communicating professional culture (Bowles, 1995). It may also facilitate organisational change through lessons learnt from an incident (Gabriel, 1995. Yanow, 1995). These key conceptual areas of storytelling will now be discussed in relation to the participants' experience in this study.

Rob details formal teaching sessions led by "*guys who have been in some of the biggest incidents that have happened in the UK in the last few years. Raoul Moat gets brought up as we have officers who were on the scene there and dealt with that".* Within an emergency preparedness context, this method of conveying information ensures that an individual who has 'lived' the experience, contributes credibility through sharing real-life experience, which is an attribute that the participants identified as important. Additionally, the experience is placed into context and is communicated within the culture of the professional blue light responder group.

This first person narrative offers credibility and cultural context to the practitioner. These are concepts that these paramedics viewed as important when receiving information. However, limitations of storytelling in this context are recognised. Firstly, as suggested within Chapter 8, the narrative is often one-dimensional and reflects the storyteller's perception and reflection (Koch, 1998. McCrone, 1991. McCrone, 1994. Bowles, 1995). Key facts may get changed in recounting experience, maybe to cover up any wrong decisions, hindering learning from the incident and ensuring a 'do no wrong' perception of the ambulance service and their responders. Secondly,

multiple individuals may give their personal perspective from an event. However, all hold differing accounts due to their individual characteristics and experiences creating *'different fictions'* (Fowler & Moon, 2007. Whelan et al, 2001). As stories are told, *"individuals reaffirm them, modify them and create new ones"* (Koch, 1998. pp1183) resulting in an experience that is not static, rather evolving as the story is being told. These differing perspectives on the same incident are important but could also create what are perceived as inconsistencies and result in the storyteller being questioned on the credibility of their account. The experience and context of the listener must also be considered, as they will interpret the story by making sense of the world in relation to what they already know, with the meaning derived from their experience (Moon & Fowler, 2008). This reflects the need for recognition of the individual paramedics experience and personal characteristics as an active listener in the storytelling process. Storytelling within emergency preparedness is currently recognised but undervalued. This study extends our knowledge of the important role that story telling has in conveying individual experience in emergency preparedness, as well as identifying potential challenges around the transfer of important information.

Jessica suggests that new knowledge is gained from *"building on from previous experience"* and offered a lively extract, demonstrating how she recognised a clinical condition from previous exposure to a similar patient. In sharing this story, Jessica's persona changed from a formal research participant to a storyteller role. Key components that appeared to change

were her speech, which became more informal and her vocal tone changed. Secondly, her body language became more animated and she gestured with her hands to replicate actions. Thirdly, rather than answering the question in various segments, her content appeared to offer key components of a classic story such as cast, context and chronological order. This switch in persona was visible in all transcripts when participants described a clinical experience, reflecting their role of storyteller within their interview.

This structure and change in persona is recognised conceptually. Stories are divided into three main sections; a beginning, middle and an end and it is commonplace for their construction to contain crucial components for example, characters and their actions, contextual settings and dialogue (Tangherlini, 2000. Koch, 1998. Kermonde, 1967). This was evident in accounts in this story. These elements, in addition to the narrator's voice, bring life to the experience (Mitchell & Charmaz, 1996), enabling the listener to live the experience through the narration. Story content, presented in this manner, is more likely to be remembered than information presented in a formal lecture format (Moon & Fowler, 2008. Yoder-Wise & Kowalski, 2003), creating a picture recall rather than just the solitary facts that might be remembered from a PowerPoint presentation. This was evident in the detail recounted by participants in the study. The impact and the detail of the story, on the individual, could be particularly important in an emergency preparedness context, where these practitioners will need to recall key information in a high-pressure situation.

By using a narrative, as occurs within a story, sense can often be made of a 'complex and unordered' situation (Bruner, 1990. Shank, 2006). This sense-making is an important aspect of understanding an unexpected multi-dimensional health-care incident, with particular relevance in emergency preparedness. This comprehension may be a result of the use of common language, a common context and a method for quantifying clinical practice. The story recipient is able to work through emotions, plan for the future and determine a foundation for their clinical practice (Tangherlini, 2000. McEwan & Kieren, 1995. Witherell & Noddings, 1991, Shank, 2006). In addition, this process allows emergency workers the ability to potentially assert **control** over an uncontrollable situation. The importance of practitioners perceiving **control** over this area is an emerging theme and is discussed in further detail in chapter 7 and in the discussion chapter (section 10.1.1, page 278). As a result of this process of understanding about an incident, storytelling in this context is more about a psychological comprehension process rather than entertainment (Tangherlini, 2000).

Using storytelling as a component of reflective practice was recognised by the participants as a significant mode of learning. An example of this is from James who states "*you just look at it as a kind of case study and think what could I have done?".* Although paramedic literature does not recognise the formal concept of 'storytelling', other forms of learning through experience are prevalent. Examples of these include the use of case studies, critical

incident debriefs and vignettes (Halpern et al, 2008. Moon & Fowler 2008. Bowles 1995. Norman et al, 1992. Ross & Lawrence, 1999. Flanagan, 1954). Through presenting some of the main contextual components of the 'story', such as type and location on the incident, and integrating main characters such as healthcare workers and the general public, a multidimensional description occurs (Koch, 1998). With additional educational materials, supporting the debrief, for example trigger questions and visual cues, this results in an educational method that is not simply storytelling, but enables the participants to 'get into' the varying characters role adding depth to the learning (Moon & Flower, 2008. Bolton, 1994) and an understanding of key parts of the story. These findings suggest the need for formalising story telling in an educational setting in emergency preparedness, and integrating real-life stories within simulation and clinical case studies.

Using critical debriefing, as a form of storytelling, enables an evaluation of a real-life incident, with the potential for reflection and learning. The interviewed paramedics suggested that this form of storytelling and evaluation happens informally with Sally stating *"sometimes it is like tea and toast for a bit and then someone will start chatting about it and it will turn into a debrief session"*. The paramedics appeared to value this informal approach and surprisingly appeared dismissive to a more structured review used in other health-care disciplines. This may reflect the ambulance service culture, with the emphasis on functional language and key facts. In contrast, storytelling within medicine and nursing is often seen as an *'art'*, with longer narratives and less emphasis on descriptive facts. This informal

method of learning, which occurs alongside more formalised approaches to debriefing, is not currently acknowledged in the emergency preparedness literature, despite it being utilised and valued by practitioners.

Using storytelling for education and reflection is beneficial as it is relatively simple to deliver (Bowles, 1995), and does not require some of the high technology and resource intensive equipment that simulation or live drills require. In addition, it enables a relatively swift method of feeding information gained from past experiences back into the system compared to more traditional academic knowledge, obtained through research (Bowles, 1995). In an area such as emergency preparedness, where the situation and threat is changing rapidly and the emergency response planning appears to be determined by reacting to real-life events, this is advantageous.

The process of storytelling educates both the storyteller and the recipient. It enables both the storyteller and the listener the opportunity and space to link clinical practice with future ideas by reflecting the experience back to the storyteller through direct questions and the opportunity for exploration of key aspects of the story (Shank, 2006). Within emergency preparedness, this may form part of a reflective practice element, given the practitioner an opportunity to reflect back on their experience, guided by their audience, creating new learning for both parties (Moon & Fowler, 2008. Fowler, 2006. Moon, 2004). Shank (2006) suggests that this may link both the personal and practical elements of an experience, and develop some conceptual

thinking through collaborative working with the storyteller and story listener, and in turn influence future practice.

A story alone offers minimal information to the listener. Key facts may be obtained but to work as a useful vessel of transmitting knowledge and enabling learning the listener must use critical thinking and reflective skills to identify key messages and learning points (Schwartz & Abbott, 2007). The stories should "facilitate learning rather than impart knowledge" (Moon & Fowler, 2008. Fowler, 2006. Moon, 2004). Within the emergency preparedness teaching session, this may involve using as structured approach, with a structured guide, containing key question for the participant to use alongside listening to the accounts.

Currently storytelling, as a form of knowledge transfer, does not appear to be formally recognised or standardised within emergency preparedness literature. Formally, no standardised reporting mechanism or repository is in use (Challen et al, 2012. Powers, 2009. Auf der Heide, 2006) and this potentially essential information is often discarded post incident, with no opportunity to view lessons learnt (Stratton, 2014b. Cohen et al, 2013b. Uddin et al 2008). From a retrospective perspective, review of interventions and decisions can be made in a reflective and logical manner, through storytelling, enabling learning at both an individual and organisational level (Boyd et al, 2012). Using the experience of other disciplines such as resuscitation (Jacobs et al, 2004), a future learning model could include a standardised reporting tool, with the opportunity for more qualitative

accounts offering an important form of evidence to improve clinical practice in this area.

In summary, within an emergency preparedness context, the use of storytelling, as a conveyor of experience, offers a way to reflect, understand, learn and implement changes from past events (Shank, 2006. Gudmundsdottir, 1995). The process of learning from real-life is viewed as credible and places the experience in the context of the ambulance service response by the participant and can be used in both preparation and in guided reflection, although awareness of the subjective and one-dimensional nature of storyteller is important.

So far this chapter has discussed the emergent themes related to the research questions, using direct participant quotes to support the interpretative phenomenological analysis and subsequent discussion of data drawing on relevant literature. These quotes and their related themes represent key aspects of the paramedics lived experience of emergency preparedness. The following section summarises the conceptual dimensions of emergency preparedness, in the context of the individual paramedics experience.

10.4 Individual dimensions of emergency preparedness

The purpose of this section is to highlight the contribution this study makes to the area of emergency preparedness, via, firstly a conceptual model

which summarises key dimensions of emergency preparedness as it relates to individual experience and secondly, through practice, education and policy recommendations.

The literature presented in chapter 1 indicated that the concept of emergency preparedness is poorly defined and lacks a clear conceptualisation that draws on an individual practitioners experience. Most studies have focused mainly on organisational health-service response. Relatively few studies have explored the individual health-care workers experience of emergency preparedness, which is a key gap this thesis addressed. This study has found that individual level experiences are important in how practitioners conceptualise emergency preparedness and how they develop new knowledge, skill and aptitudes.

This study found that the individual workers experience of emergency preparedness needs to be considered in future planning, to optimise preparation, including education, training and response. Personal context and experience needs to be accounted for within preparedness, in addition to the core clinical skills and physical response plans already in place. In addition, preparedness needs to be adaptable and updateable to reflect the diverse and ever-changing current threat, with teaching and learning methods being adapted to optimally meet the learning styles of this group.

Through consideration of the emergent themes and discussion, the following dimensions of the individual paramedics experience of emergency

preparedness have been identified (figure 11). Although some areas, such as practice-based preparation (Baack & Alfred, 2013. Hammad et al, 2011. Bersch & Clemons, 2008), have previously been acknowledged as important, this is the first study that has attempted to deconstruct and then reconstruct the individual paramedics emergency preparedness experience as a whole, in order to understand how the individual experiences emergency preparedness.

The individual dimensions are now presented, followed by a conceptual model of the individual paramedics experience of emergency preparedness. The identified sub-ordinate themes are noted in italics within each dimension, demonstrating how the data fits into the individual dimensions and the conceptual model.

Role determination *(self identity)* The paramedics self-identity as an '*action hero*' and *'rescuer'* appeared an important motivator for these individuals to engage with emergency preparedness. The ambulance service has a distinct sub-culture, with notable characteristics, based on a military model, such as hierarchy, communication style, stoic attitude and use of humour. The paramedics appear to conform to the traits of this sub-culture and this impacts on their motivation in this area. These role characteristics are part of their individual experience working within emergency preparedness.

Personal resilience *(personal resilience)* The psychological impact of their professional role on pre-hospital personnel has been previously acknowledged (Williams, 2013a. Williams, 2013b. Williams, 2012. Alden et al, 2008.). However, this study extends our knowledge on how paramedics recognise the impact of the emotional and psychological aspect of emergency preparedness, detailing the need for individual personal resilience. They detailed numerous coping mechanisms, including dehumanising the patients and using humour to cope with overwhelming and distressing incidents. Coping mechanisms appear linked to individual personality characteristics, such as age, previous experience, generation and personality type, which are not currently acknowledged when preparing these individuals. Psychological preparation is not currently perceived to occur and they suggest the need for individualistic psychological training and support pre, during and post incident.

Within this individual context, the personal resilience of each worker and their past exposure and experience of mass casualty incidents needs to be considered. Although literature exists acknowledging the psychological impact post-event, additional consideration needs to occur pre-event. Acknowledging and responding to the psychological needs of these professionals, who may be called to respond to a physically and psychologically overwhelming event, should be considered as a component of individualistic emergency preparedness.

Uncertainty *(self-identity, uncertainty, risk and threat)* Flexibility, adaptability and the acknowledgement of uncertainty and chaos appeared important to these participants, both in their preparation and response to an incident. This concept is not currently recognised within the education provision (Boyd et al, 2012), rather training content appears static and does not acknowledge the complexities of this area. Acknowledging the uncertainty may offer some control and reassurance to these individuals as they engage in preparedness activities and has not been previously recognised.

Practice based preparation *(safety and trust, preparation, evidence-base)* Participants appear to prefer practice-based preparation, as they see this as credible and transferrable to real-life incidents. This form of education reflects the practice based learning style that is common amongst emergency personnel. Training frequency is an important consideration with frequency dependant on individual characteristics. Whilst the literature acknowledges the practical aspect of the paramedic role, the acknowledgement of the importance of practice-based preparation and emergency preparedness is a new finding.

Knowledge and evidence (practice and experience based, and knowledge transfer) *(story-telling, evidence-base)* The paramedics do not value traditional sources of evidence in the same way as practice-based evidence, they are unsure of how to translate the data and then transfer it into their practice and it is very limited in scope. These practitioners rely on

clinical policy and guidance, but admit that current practice is often a 'best guess' or 'made up'. They appear to value tacit based knowledge and view story-telling as a credible form of knowledge transfer as this is credible and first-hand accounts of events and this information can be applied locally to their practice.

Within the area of knowledge and evidence, it is clear that there is potential for numerous developments, including the discussion as to what is evidence and knowledge in this area. From the interviews, it is evident that new knowledge needs to be translated, communicated and utilised by front-line practitioners in a form that they can relate to and they find applicable to the practical aspect of their role. The recognition of storytelling as important mechanism for utilising the transfer of information is an important finding of this study and this form of knowledge needs recognition within the emergency preparedness field.

Anticipation *(risk and threat, uncertainty, preparation)* The recognition of 'anticipation' as part of the paramedics' emergency preparedness preparation is a new finding. Participants experience anticipation through constantly waiting and preparing for an incident, which has an impact on training, education and responsiveness. A key focus in this time is training and education, ensuring that they are ready to respond with no notice. It is not known the long-term impact of 'anticipation' on these individuals and it appears that individual consideration for their practical and psychological needs are required during this time.

Safety and Trust *(risk and threat, safety and trust)* Participants experience a perception of safety and trust through education and preparing with their specialised equipment. These areas offered them increased control, safety, trust and confidence and appeared to enable them in their preparedness work.

Willingness to work *(self identity, risk and threat, safety and trust)* Numerous factors impact on the participant's willingness to work, including feeling confident and competent with training, education, equipment and their personal resilience. In addition, personal factors such as family, friends and previous experience appear to impact their willingness to work, reflecting the need for education that considers the individual context. These factors do not appear to be considered within the current paramedics preparedness education.

These individual dimensions will now be presented in the context of a conceptual model, reflecting the individual paramedics' experience of emergency preparedness. No previous model exists examining the multi-dimensions of emergency preparedness, as experienced by the paramedic.

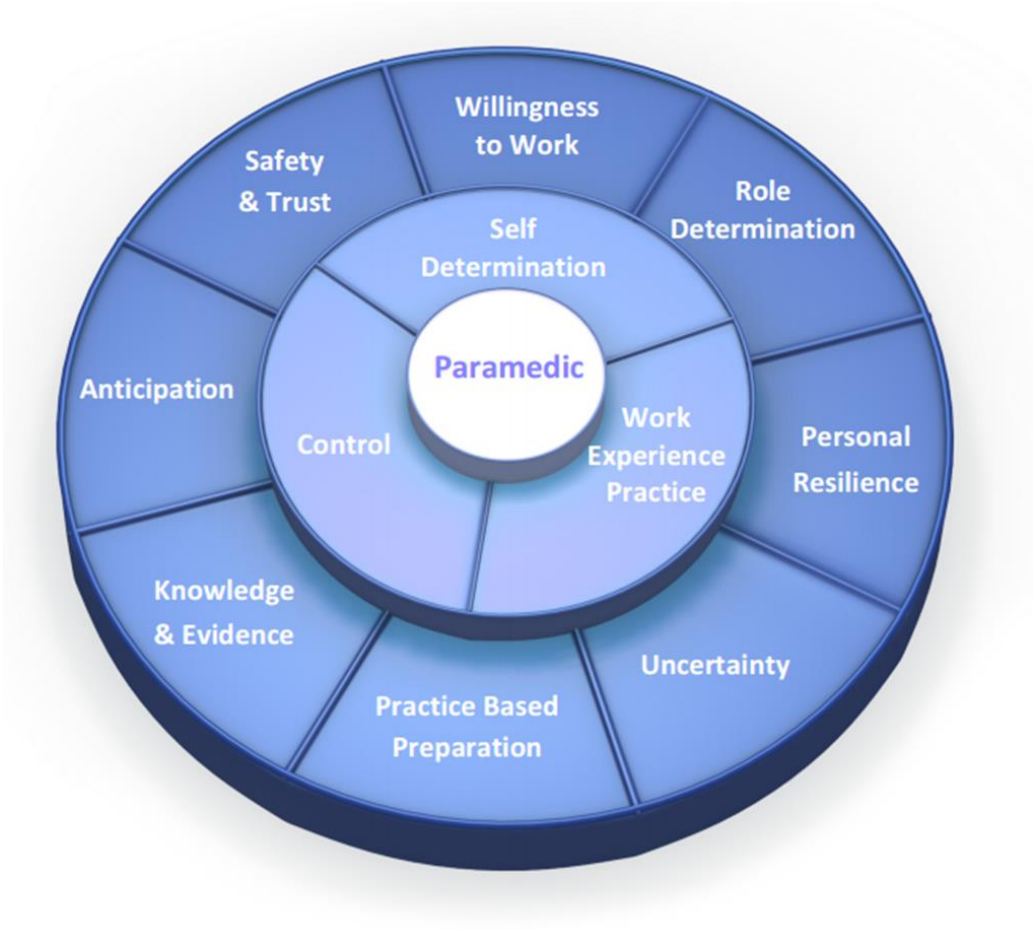

Figure 11. *The Dimensions of individual Emergency Preparedness (The DiEP model) – the paramedics' experience.*

The individual paramedic forms the centre of this model, surrounded by the emergent superordinate themes of *'self determination', 'control' and 'experience based practice'*. These offer a **static** representation of the conceptual model of individual paramedics experience of emergency preparedness. It does not attempt to identify direct links between dimensions or explain relationships between the different dimensions,

rather it offers a shared experience with the dimensions presented within the outer ring of this model that were identified through the data analysis, interpretation and discussion phases of this study.

Additionally, as a result of the study findings and subsequent discussion, a definition of what emergency preparedness means to the individual paramedic has been developed.

Individual emergency preparedness - definition

"The experience of emergency preparedness at the individual level is a cognitive (what happened) and an affective response (how you felt about it) made up of key dimensions of experience".

This definition, reflecting the individual's experience, is a new contribution to this speciality and reflects the contextual and multiple dimensions of individual preparedness.

This section has reviewed the emergent individual dimensions. The study findings will now review implications for both clinical practice and for evidence development.

10.5 Implications of the findings for practice and evidence-development

The objective for this study was to develop the concept of emergency preparedness, through the lived experiences of paramedics, an area sparsely explored and understood. The detailed accounts obtained from the participants highlight some key areas for development, and this knowledge can be used to positively change the design, delivery and evaluation of preparedness in clinical practice. It was my intention, as a nurse researcher, to generate theory that can inform future developments in the areas of clinical practice, education and policy. There are a number of key considerations, impacting on clinical practice, education and policy, which are drawn from the data analysis and subsequent discussion and these are proposed within this section.

10.5.1 Considerations for clinical practice, education and policy.

1). A psychological preparation pathway should be included within emergency preparedness education, encompassing the pre-incident, during incident and post-incident phases. This should include an individualised component, in addition to generic content.

In addition to their role of clinical response, it was noted that these individuals needed personal resilience to function in this role. This study highlights a lack of awareness and preparation in this area at an individual level. Psychological support is required in all phases of emergency

response, from preparedness, response through to recovery. Personal resilience needs to be individualistic in nature, reflecting personal contextual life experience and should be delivered in addition to the generic content currently offered.

2). Personal context and past experience need to be accounted for as part of paramedics' emergency preparedness training. Individual dimensions, reflecting the individuals motivation, personal characteristics and role attributes need to be considered in the preparedness phase.

The recognition of the individual, their past life experience, personal attributes and other individualistic factors should be recognised within emergency preparedness education. This personal context should be incorporated to their preparation programme, alongside the standardised core skill and knowledge development already delivered as part of emergency preparedness.

3). Emergency preparedness educational content needs to be adaptable and updateable to reflect the diverse and ever changing current threat, offering individual workers the feeling of control over their preparation and clinical practice.

Participants noted that the potential incidents that they are being prepared to respond to are poorly defined and changeable, reflecting the uncertainty of world events. Currently the preparedness education is generic and it is not updated routinely to the current threat, resulting in the paramedic

feeling 'one step behind' what is occurring in the world. A mechanism, for example on-line modules or short practical session, that respond to current threats and address issues in the preparation of paramedics is required, to offer the individual some control over their preparation and potential response.

4). Emergency preparedness education needs to be delivered using a teaching style, reflective of the practice-based learning approach favoured by paramedics.

The participants highlighted the importance of simulation and hands-on practical training due to the lack of exposure to real-life incidents. This type of training appeared to offer them control and confidence within their role. Currently, no guidance exists that suggests that emergency preparedness education should incorporate a practical element for all staff. The interviews highlighted how these paramedics valued practical based education and theoretical knowledge that has a direct impact on their clinical role. Content and teaching style for emergency preparedness training should match these professionals' personal attributes and learning style.

5). Formal recognition of the initial phase of response, termed 'chaos' by participants. Incorporation of key concepts supporting this time frame within emergency preparedness plans, education and training is required.

An acknowledgment that due to the overwhelming nature of these events in terms of the numbers of critically ill or injured casualties involved and the

resources needed to respond, that the initial period of response would be 'chaos'. Reflection and acknowledgement of this is needed within preparedness plans, education and training to offer control to the individual responders and reflect the reality that they will encounter.

6). Formal recognition of the 'anticipatory state' that these healthcare workers experience, when 'waiting' for an incident. Acknowledgment of the potential impact of this phase on the individuals physical, psychological and education response is required.

The focus in preparedness is on education and training, whilst waiting to respond to an incident. The current focus within preparedness is on active preparation, with little recognition of the impact of continuously waiting and anticipating an event. Reflecting this anticipatory response, consideration of the individual is required in how they respond to frequency of training, the physical and psychological demands of training and the feeling of constantly 'being on the starters blocks' and the impact of this on the individual.

7). Formal recognition and acknowledgement of practice generated knowledge. This practice based knowledge needs to be communicated and utilized in a form that these paramedics can relate to and that they find applicable to their role and their clinical practice.

Practice based knowledge is viewed as credible and applicable to their role by these paramedics**.** Recognition of this type of knowledge, in conjunction with other forms of knowledge and evidence, is required to enhance clinical practice within this area.

8). Promote an environment where paramedics can undertake, engage, review and value academic research, in addition to practice generated knowledge.

Paramedics must be able to review and critique evidence in this area, to enhance clinical practice. Differing sources of knowledge needs to be acknowledged and formalised such as case study and peer accounts communicated from peer to peer through a story-telling technique. There needs to be a movement from 'best guess' to a formalised evidence base in this area. This means the need to develop the evidence-base and consider what types of study design may work or what methodological development is required in the future.

9). Recognition and implementation of storytelling as a conveyor of emergency preparedness information.

Due to the lack of exposure of these large incidents in real-life, these paramedics viewed storytelling as a credible and valid form of obtaining real-life information that have a clear practical-based application. This method of conveying this information needs recognition within the emergency preparedness to ensure that the information is transmitted in the most optimum way to meet the needs of these individuals.

10). A central repository, containing key facts about past incidents, should be accessible to pre-hospital personnel. In addition, a standardised reporting template should be developed to allow the development of a practice-based evidence base to develop.

Although central, retrospective repositories are available in other health-care fields such as resuscitation and trauma, no formalised database exists in the area of emergency preparedness. As the participants value real life experience and research is challenging to undertake in this area, a central repository with a collation of real life experiences and lessons learnt would be a valuable learning tool for these paramedics. A standardised reporting template detailing real-life incidents, similar to the Utstein template used in the speciality of resuscitation containing uniform definitions, terminology and data-sets (Idrid et al, 2015), would enable a new form of knowledge in the field of emergency preparedness, which could be used to develop evidence in this field, enhancing future training and response.

Table 11. *Summary of the clinical practice, educational and policy considerations*

1.	A psychological preparation pathway should be included within emergency preparedness education, encompassing the pre-incident, during incident and post-incident phases. This should include an individualised component, in addition to generic content.
2.	Personal context and past experience need to be accounted for as part of paramedics' emergency preparedness training. Individual dimensions, reflecting the individuals motivation, personal characteristics and role attributes need to be considered in the preparedness phase.
3.	Emergency preparedness educational content needs to be adaptable and updateable to reflect the diverse and ever changing current threat, offering individual workers the feeling of control over their preparation and clinical practice.
4.	Emergency preparedness education needs to be delivered using a teaching style, reflective of the practice-based learning approach favoured by paramedics.
5.	Formal recognition of the initial phase of response, termed 'chaos' by participants. Incorporation of key concepts supporting this time frame within emergency preparedness plans, education and training is required.
6.	Formal recognition of the 'anticipatory state' that these healthcare workers experience, when 'waiting' for an incident. Acknowledgment of the potential impact of this phase on the individuals physical, psychological and education response is required.
7.	Formal recognition and acknowledgement of practice generated knowledge. This practice based knowledge needs to be communicated and utilized in a form that these paramedics can relate to and that they find applicable to their role and their clinical practice.
8.	Promote an environment where paramedics can undertake, engage, review and value academic research, in addition to practice generated knowledge.
9.	Recognition and implementation of storytelling as a conveyor of emergency preparedness information.
10.	A central repository, containing key facts about past incidents, should be accessible to pre-hospital personnel. In addition, a standardised reporting template should be developed to allow the development of a practice-based evidence base to develop.

10.6 Implications for further research

This analysis of the lived experiences of paramedic has resulted in the recognition and discussion of some key areas where developments can be made in both theoretical contribution and practical application. However, further exploration of this area is required to understand how these individuals train and translate knowledge into practice in this area, to ensure that current and future practice is developed in an optimum manner for both the individual, the ambulance organisation and the wider population that they serve and respond to.

The area of preparedness has specific challenges to research due to firstly, that it is seen as low priority to every day service demands and does not appear a priority to many clinicians and secondly, that the outcomes can be challenging to measure as the individual worker can never be fully prepared for this anticipated, but complex to define events. These incidents are relatively rare so it is difficult to evaluate the preparation in response to a real-life incident. However, as a result of this study, further research is recommended in the following areas.

Recommendation 1: To determine how paramedics review and use the current evidence base and translate this evidence into practice. A minimal evidence base currently exists for this multi-dimensional and developing area. Further investigation is required to determine how evidence and knowledge is used in current practice guidelines and how

paramedics receive, select, evaluate and disseminate clinical evidence in practice.

Recommendation 2: To assess the benefit of adaptable versus standardised plans and determine how standardised plans can be adapted and applied to local contexts. Multiple participants suggested preparation and planning needs to be flexible in approach due to the uncertainty and diverse nature of these incidents. It is not known whether this form of adaptable planning is beneficial and would work in practice.

Recommendation 3: Identification of elements of the individual experience that provide preparedness stability: This study highlighted the importance of acknowledging the individual practitioner within emergency preparedness. Further understanding of the elements of the individual experience that offer control, stability and responsiveness, that these participants highlighted as important and could potentially enhance response are required.

Recommendation 4: Does emergency preparedness need an evidence base? If so, what should it, and the related evidence look like and how can it be developed? With the focus on evidence-based health care practice, it is presumed that a 'traditional' evidence base needs to be developed in this area. Further research, discussion and consensus is required to determine how an evidence-base could be developed and what it should look like to guide practice and be of use to front-line practitioners.

Recommendation 5: Further research into how research from this and related fields is translated into clinical practice in this field: These interviews demonstrate that these paramedics perceive that the published evidence appears to have limited application in their clinical pre-hospital care practice and that current practice is a "best guess". It is important to determine a suitable vehicle to transfer new knowledge from this and other related specialities into clinical practice that these practitioners can use.

Recommendation 6: How can individual aspects of emergency preparedness be incorporated in emergency preparedness plans? The current focus on emergency preparedness plans appear to be at an organisational level. Further development as to the individual health-care works role and personal attributes contribution to emergency preparedness should be explored, such as the impact of family members and the impact of equipment and training.

Table 12. *Summary of additional research recommendations.*

1.	To determine how paramedics review and use the current evidence base and translate this evidence into practice.
2.	To assess the benefit of adaptable versus standardised plans and determine how standardised plans can be adapted and applied to local contexts.
3.	Identification of elements of the individual experience that provide stability.
4.	Does emergency preparedness need an evidence base? If so, what should it, and the related evidence look like and how can it be developed?
5.	Further research into how research from this and related fields is translated into clinical practice in this field.
6.	How can individual aspects of emergency preparedness be incorporated in emergency preparedness plans?

10.7 Summary

This discussion chapter, through the use of participant quotes and relevant theory, has presented key findings that reflect the individual paramedics experience of emergency preparedness. The findings from this study make several contributions to the current emergency preparedness literature, which does not currently consider the individual paramedic within this context. Through the data analysis, subsequent discussion and conceptual model, this study has identified key areas of individual experience, which have the potential to impact on the effectiveness of emergency preparedness, in addition to key recommendations for clinical practice and policy in this area. These dimensions of experience have contributed to the development of a conceptual model and definition of the individual

experience of emergency preparedness, which leads to a set of practice and research recommendations.

Chapter 11

Conclusion

11.0 Introduction

This chapter concludes the thesis by reflecting on this study. Three areas will be considered; the process of undertaking an IPA methodology study to explore an individual's lived experience, my role and impact as a researcher and a further section exploring how this research will be disseminated before the thesis findings are summarised.

11.1 Reflection and limitations of the study

The aim of this study was to explore the paramedic experience of emergency preparedness, because individual experience of emergency preparedness is poorly understood. IPA offered a suitable methodology as it offered the researcher the opportunity for in-depth, individual understanding of experience (Smith et al, 2009). This was particularly important in the area of emergency preparedness because the individual health-care worker perspective is absent in academic literature and its importance is not recognised in the same way as other areas.

Although the sample size of an IPA study is debated within research methodology literature due to the relatively low numbers compared to other research approaches, utilising this approach with a sample size of thirteen enabled the in-depth insight required for a topic area that has not

previously been considered and reflected an appropriate sample when using an IPA methodology (Wagstaff et al, 2014. Smith et al, 2009. Biggerstaff & Thompson, 2008). Utilising this approach enabled the in-depth insight into emergency preparedness that has not previously been explored

The interpretative nature of IPA is viewed as a strength in this study, however transparency of the theme development process is necessary to ensure validity. By the nature of the researcher interpreting the data, through the hermeneutic cycle, there may be questions on how the researcher generated themes and research findings. As a result, the thesis includes details of how the researcher's preconceptions and fore understandings were visible through discussion with an IPA group and peer-review, using the interview schedule as a guide (appendix 12). In addition, a research diary was completed with personal reflections throughout the research process, allowing the researcher to consider and reflect on their own perceptions on the topic (described in 3.9, appendix 15). The data analysis sections include tables detailing direct quotes and themes from across the participants (including interpretation) to enhance the audit trail and promote a legitimate account (Houghton et al, 2013b. Ryan-Nicholls & Wills, 2009 and Bryar, 1999). In addition, it allows the researcher to consider and reflect on their perceptions of this topic area. This ensures that the *"account produced is a credible one, not the only credible one"* (Smith et al, 2009; p181). This process is termed an independent audit (Yin, 1989) and ensures a visible paper trail detailing

each stage of the research process. As a form of methodology, IPA was very suitable.

As a result of this study, there will be increased understanding of some of the key themes and related theoretical concepts of a paramedic's experience of emergency preparedness (see section 10.4). The idiographic nature of IPA results in findings that are theoretically generalisable, promoting connections between research results, the literature and the readers experience (Smith & Osborn, 2003) resulting in a detailed understanding of an experience, within a given context (Polit & Beck, 2008). The reality faced by this group of workers will differ depending on their clinical experience, training and region of work, and the results are viewed within this context. However, these findings can contribute to an evolving understanding of this individual dimensions. It is anticipated that other ambulance services and education leads can anticipate how these findings, placing the individual worker at the centre of emergency preparedness planning, enhances their motivation to engage with this area resulting in benefits for both the individual and the ambulance service.

A considered limitation of this study is recall bias from the participants (Sedgewick, 2012. King & Horrocks, 2011. Smith et al, 2009). Many of the paramedics interviewed have worked for the ambulance service for many years and were recalling experiences, events and training from their past. Although the accuracy of their recall was considered when reviewing the interview transcripts, it was determined that the opinion they offered at the

time of the interview was their individual experience, determined by multiple factors, including the passage of time. This recall of past experience is advantageous as it offers a breadth to their experience, as opposed to recalling just one recent training event.

Transcribing the interviews, although time consuming enabled me to develop an additional level of reflection on the interviews. During transcription and when analysing the transcripts, I could often 'hear' the participant as I reread through the quotes, resulting in an audio memory and a mental image of the context of the discussion, remembering non-verbal cues that occurred within the discussion. I believe this level of reflection and comprehension would not have been possible if a third party had transcribed the interviews.

11.1.1 Reflections on the study context

This study has been primarily concerned with individual paramedics experience of emergency preparedness, rather than the organisational perspective. An understanding of the organisational experience would enable the participants experience to be placed into some context adding an additional dimension to the conceptual model. This understanding would be useful when reviewing the implications and recommendations, as it would extend our knowledge on how the findings of this study could be applied in real-life.

An issue that was not addressed in this study was whether the individual had undertaken emergency preparedness education recently, whether they had a specialist interest in this area and whether they had been involved in real-life incidents. This information would add an interesting dimension in reviewing their experiences within this context, although this was not the aim of the study. Although this information became apparent through some of the interviews, additional information could have been obtained through the NHS Trusts training database. However, this contextual information may have impacted on the trust relationship between researcher and participant, as they may have believed that the aim of the study was comparing information obtained from these sessions with current knowledge.

Whilst this study focused on paramedics, it is important to acknowledge that these practitioners do not work in isolation and numerous other health-care workers work in a pre-hospital role and engage in emergency preparedness activities (NARU, 2015. NHS England, 2014.). Examples of these include the air ambulance paramedics, ambulance service technicians and first responders (NARU, 2015). As this study addressed research questions in an area with limited research evidence and reflecting the need for homogeneity within the sample of an IPA study (Smith et al, 2009. Biggerstaff & Thompson, 1998) it was decided to focus on solely on paramedics. However, future studies may consider these additional roles and also the experiences of other emergency service workers in other health-care setting.

11.1.2 Reflections on being a researcher

I particularly enjoyed the practical elements of the research, despite the challenges of recruiting participants in a healthcare service that is under demand. The opportunity to engage with fellow professionals and add to a knowledge base has resulted in an increase in professional confidence and the ability to review information and research in a new way as I apply these new skills in my academic career. Through self and peer reflection, a key area of self-development was in my interview skills, with the learning of multiple techniques to enhance the quality of the interview and the subsequent data that is collected.

One of the most frustrating stages of the study was the data analysis process. The result was a 'theme overload'. This overwhelming stage of data analysis is similar to *"drowning in a deep bowl of spaghetti"* (Nolan, 2011). This overwhelming situation, and subsequent resistance of moving from the individual account to the group accounts is common within IPA research (Wagstaff et al, 2014. Nolan, 2011). Numerous strategies were used to work through this phase including the use of mind maps, presentation of initial themes at a local IPA group and discussion with my supervisors. These discussions resulted in the emerged themes presented within this thesis, plus some 'parked' themes that can be revisited in another format in the future.

I am more aware than ever of the gap between research, theory and practice and will endeavour to link these areas as I move back into a clinical teaching role and interact with my undergraduate nursing and paramedic students. On reflection, research is in their eyes, far removed from their day-to-day clinical practice and I have renewed enthusiasm of promoting the benefits of evidence-based practice to them.

11.2 Dissemination of results

The progress of this study has been presented internally at the Coventry University Faculty of Health and Life Sciences research event and also at the Warwick University IPA group.

I intend to disseminate the findings and implications of this study locally, nationally and internationally, generating research and policy impact. The local ambulance service has requested that I present the findings of this study both to the Board level and to the Hazardous Area Response Team. In addition, I will report the findings to the paramedic teaching team at my place of employment (Coventry University) and also incorporate the research methods and clinical findings within my teaching of undergraduate and postgraduate nursing students. I envisage publications of the IPA methodology within a nursing research journal and also publications of the findings of this study in a journal relevant to the content. The specific journals that I have considered include: Nurse Researcher, Emergency Medicine Journal, Prehospital and Disaster Medicine and Journal of

Emergency Nursing. I will apply for oral presentations at the Royal College of Nursing (RCN) International Nursing Research Conference and also a relevant pre-hospital care conference.

11.3 Summary of thesis contribution to new knowledge

This research extends our knowledge and understanding of how paramedics experience emergency preparedness in the following ways:-

1). A recognition that the consideration of experience is important when evaluating how paramedics prepare and train for their emergency preparedness role. Whilst previous research has acknowledged some important factors such as training methods and the recall of knowledge, a key strength of this study is the identification of multiple dimensions that make up individual experience and effectiveness in this clinical area.

2). This study has found that individual experience of emergency preparedness is complex, multidimensional and individualistic. The complexities of working in this area, from the experience of the individual practitioner, have not been previously considered in the academic literature or policy.

3). Taken together, the findings of this study have resulted in the development of a conceptual model (the DiEP model, section 10.4) and a definition of emergency preparedness at an individual level. This model

describes key dimensions that are important to the individual, and is linked to this new definition of emergency preparedness. Further work needs to consider how these dimensions may work together to enhance practitioner preparation, effectiveness and experience.

4). The study has resulted in the development of several important research, educational and practical implications (see section 10.5.1) which have not been previously identified.

5). This study proposes a significant change in pre-incident education to make it more effective and ensure that emergency preparedness is fit for purpose.

11.4 Summary of the thesis

This thesis set out to explore paramedics lived experiences of emergency preparedness. A literature review of academic and grey papers was conducted, determining that this speciality's evidence-base is in its infancy. The literature is predominantly atheoretical, with the majority of published papers reporting anecdotal reports and clinical audit. The studies presented thus far provided limited evidence for the preparation stage of preparedness and a limited insight into how paramedics engage with emergency preparedness.

The study has shown that paramedics do experience emergency preparedness on an individual level. This research extends our knowledge of how the individual practitioner experiences emergency preparedness and contributes to existing knowledge by providing an understanding of key areas that impact their experience.

These key findings include firstly, the need to recognise the predisposition, fears and expectations of the individual paramedic, in addition to their motivations, barriers and enablers during preparation for a mass casualty incident. These appeared to include role and professional culture identity, willingness to work in relation to personal and family safety perception and the impact of training and the awareness of safety on personal confidence to respond to an incident. Secondly, that this group of professionals appear to value hands on experience and hands on practice. This practice-based approach to preparation offers an element of control to the uncertain clinical situation that they may respond to, reflecting the practical nature of their clinical role. Thirdly, this research offers an insight into how paramedics perceive, utilise and transfer knowledge and evidence from theory into clinical practice, with a preference for story telling, as a method for conveying information, due to its first person account that is perceived as credible to these individuals.

Additionally, this thesis has created a new model, presented as the DiEP model, and a definition (section 10.4) reflecting the individual paramedics experience of emergency preparedness. This model offers a conceptual

understanding of complex and multiple areas of their experience, suggests consideration of these in future preparedness work, and should inform clinical practice.

Key implications for practice and policy to take forward are recommended, with suggestions for further research to gain an understanding of the elements of the individual experience that offer control, stability and enhance response and to determine what the evidence base for the speciality of emergency preparedness should look like.

In conclusion, the evidence from this study suggests that standard emergency preparedness, with the focus at organisational level, is not sufficient for the individual worker or for an overall effective response. There is a need for a new form of emergency preparedness that works on an individual context, recognising the numerous personal factors that impact on preparation and response. This study has contributed new knowledge in this area by suggesting that the concept of emergency preparedness needs to consider the individual health care workers predispositions and experience, in addition to the organisational needs within its planning requirements. A conceptual model has been devised detailing some of the areas that should be considered at individual level to enhance preparedness and the preparation of the paramedic to these unknown incidents. Standard, generic emergency preparedness serve as a preparation foundation, but a new form of preparedness needs to be developed, recognising the individual workers motivations, barriers and enablers in this area. In

recognising these individualistic elements, some stability and control may be created in an area that is unpredictable and is often viewed as chaotic. This new knowledge should be used to generate new forms of clinical practice, making emergency preparedness more effective, appropriate and resilient.

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APPENDICES

Appendix 1

Literature searching strategy

Population search strategies

KW = key word
DE = descriptors
$ = wildcard for any number of characters
? = wildcard for single character
" " = need exact match

Applied Social Sciences Index and Abstracts (ASSIA)

1. KW = "emergency preparedness" or "emergency planning" or "major incident planning" or "disaster management" or "emergency management"
2. DE = "natural disaster" or "man-made disaster" or "pandemic" or "terrorism"
3. DE = "EMS" or "emergency medical service" or "paramedic" or "technician" or "pre-hospital personnel" or "pre-hospital agency" or "category 1 responder"
4. KW = "global" or "international" or "national" or "serious"
5. DE = "efficiency" or "effectiveness"
6. DE = "triage" or "care" or "emergency services" or "rescue services"
7. DE = "experience" or 'perception' or 'training" or "motivations" or "barriers" or "enablers" or "engagement"
8. Limit to English language and after 2001
9. 1 + 2 or 1 +3 or 1 + 4
10. 1 + 5 or 1 + 6 or 1 + 7

British Nursing Index

1. exp "disaster?" or "disaster planning" or "emergency preparedness"
2. KW = "accident and emergency service?" or "emergency service?"
3. limit to English language and after 2001
4. United Kingdom or UK or "U.K." or Great Britain or England or Scotland or Wales or Northern Ireland
5. 1 + 2

EMBASE

1. exp 'disaster planning' or "emergency preparedness"
2. exp "terrorism"

3. exp “serious$” or “catastrophic” or “large” or “large-scale” or “global” or “international$” or “national$”
4. limit to English language and after 2001
5. “United Kingdom” or “UK” or “U.K.” or “Great Britain” or “England” or “Scotland” or “Welsh” or “NHS” or “N.H.S” or “National Health Service”
6. 1 + 2 and 2 and 1 + 2 and 1 + 3

Health Management Information Consortium

1. exp “major incident planning” or “emergency planning” or “emergency management” or “emergency preparedness”
2. exp “disaster$” or “major incident?” or “terrorism” or “CBRN” or “decontamination”
3. “extraordinary” or “serious$” or “catastrophic$” or “large” or “large-scale” or “global” or “international” or “national” or “Severe” or “extreme”
4. exp “risk” or “risk perception” or “threat”
5. exp “pre-hospital care”
6. limit to English language and after 2001
7. 1 + 3 or 1 + 4 or 1 + 5 or 2 + 3 or 2 + 4 or 2 + 5

Medline

1. exp “disaster planning” or “emergency preparedness”
2. “disasters or “catastrophes” or exp “mass casualty incidents” or “terrorism”
3. “extraordinary$” or “serious$” or “catastrophic” or “large” or “large scale” or “global$” or “international$” or “national” or “severe” or “extreme” or “major” or “complex” or “critical”
4. “readiness” or “preparedness”
5. “experience” or “perception” or “training” or “motivations” or barriers” or “enablers” or “engagement”
6. limit to English language and after 2001
7. 1 + 3 or 1 + 4 or 1 + 5 or 2 + 3 or 2 + 4 or 2 +5

Psycinfo

1. exp “emergency preparedness” or “emergency management”
2. “disasters” or “terrorism” or “CBRN”
3. “extraordinary” or “serious” or “catastrophic” or “large” or “global” or “international” or “national” or “Severe”
4. “organizational effectiveness” or “Emergency services” or “health care services”
5. “risk” or “risk perception” or “threat”
6. “experience” or “perception” or “training” or “roles within” or “motivations” or “barriers” or “enablers” or “engagement”
7. limit to English language and after 2001

8. health care service or health care delivery or public health services or emergency services

SCOPUS

1. “emergency management” or “disaster planning” or “emergency preparedness” or “emergency planning) AND TITLE_ABS_KEY (healthcare or hospital or ambulance or public health or NHS)

Literature review identification: DOCTYPE(re)

Appendix 2 – Research Summary Table

Study	Aim	Population	Methods	Data analysis	Results	Comment
Challen et al 2012, United Kingdom	To identify, analyse and assess the location, source and quality of emergency planning publications in the academic and UK grey literature		Scoping review using data sources and recognised organisations.	Aggregative synthesis to analyse papers and documents against a framework based on a modified FEMA Emergency Planning cycle	2736 titles identified from the academic literature. 1603 were relevant. 45% were from North America. 27% were commentaries/editorials and 22% were event reports. 192 documents from the grey literature. 97 were relevant. 76% were event reports.	Lack of clarity as to validity and generalisability. Little evidence that this potential evidence base has been exploited through synthesis to inform policy and practice. The type and structure of evidence that would be of most value to emergency planners and policymakers has yet to be identified.
Cooper, S 2005, United Kingdom	To develop an understanding of the current system and future development of training and education within a large ambulance trust (based upon the experiences, beliefs, and opinions of stakeholders)	WAST Ambulance Trust (Cornwall, Devon and Somerset). Employs 1,300 staff (of which 1,150 are clinical/operational) Stratified, purposive sample. Objective to reach data saturation	Qualitative, naturalistic inquiry, using an interpretative constructivist approach for 44 interviews	Constant comparison method	Key emergency themes include: issues around prescribed programme entry levels and methods; the desire for a higher education curriculum with a balance between theory and practice; valid and reliable assessment methods; development of a supportive mentorship framework; an emphasis on self directed professional development with a focus on deskilling issues; and development of interprofessional collaborative links	UK ambulance service in a transition phase/emerging profession. Further research required.

Daily, E & Birnbaum, M. 2010. USA	To review published disaster health competencies to determine commonalities and universal applicability for disaster preparedness		Literature review using major keywords	Literature search with manual search of references 86 articles identified. 20 articles failed to meet inclusion criteria. 27 articles did not meet the additional criteria leaving 39 articles for analysis.	Hundreds of competencies for disaster healthcare personnel have been developed and endorsed by governmental and professional organisations. Imprecise and inconsistent terminology and structure present Universal acceptance and application of competencies are lacking	Further development of a framework and standardised terminology for the articulation of competency sets for disaster health professionals is needed before they can be accepted and adapted universally.
Eisenman, D & Long, A 2006. USA	To describe variations in preparedness among the population of Los Angeles County after the September 11th, 2001 and subsequent anthrax attacks	Los Angeles County Health Survey – non-institutionalized population of L.A.	Data from 2004 Los Angeles County Health Survey was analysed (from a digit-dialled telephone survey of the non-institutionalised population of L.A. County (Oct 2002 – Feb 2003)	Univariate analysis was performed to characterize the sample, followed by bivariate analysis to determine the relationship between the dependent variables and the predisposing, enabling, and need variables. Finally, multiple variable logistic regression analyses were performed with preparedness as	28% of the population had emergency supplies 17.1% developed an emergency plan in the past year in response to the possibility of terrorism	Old data Obtained from a routine health survey Respondents not health-care professionals/workers

				the dependent variable		
Fung et al 2008. Hong Kong	A survey exploring Hong Kong nurses' disaster preparedness	174 practising Registered Nurses studying a Master's degree at a Hong Kong university	A questionnaire (26 questions divided into 4 sections). Section 1:- demographics. Section 2:- preparedness to deal with a disaster at work/existence of protocols in hospitals. Section 3:- external agencies. Section 4:- education.		84.8% were aware of the existence of a protocol on disaster management at their workplace. About one-third would respond in accordance with protocol (38.4%) or rely on directions from their immediate supervisors (34.8%). 97% of nurses suggested that they were not adequately prepared for disasters.	Response rate 94% Concluded that disaster management training should be included in the basic education of nurses.
Linney et al 2011. UK	To find consensus amongst multi-agency chemical, biological, radiological, nuclear and explosive (CBRNe) experts on the factors that must be included in future NHS CBRNe competencies	43 experts (combination of purposive and snowball sampling)	Anonymised online Delphi study (2 rounds of survey – Likert-scored questions)	Consensus achieved in the 46 questions	Generation of 10 suggested core training competencies. Conclusion:- urgent need to standardise national planning, training and evaluation of NHS staff who are expected to response to CBRNe and other emergencies.	Recommendations:- further training is needed to identify training and response templates so that lessons can be learned from these experiences and fed back to improve future response.
Jacobson et al 2010. USA	To assess the self-reported terrorism preparedness and training needs of a nurse workforce	3508 rural nurses (Texas, USA)	Mailed survey	Multinominal logistic regression and descriptive statistics	Limited bioterrorism-related training Fewer than 10% were confident n their ability to diagnose/treat bioterrorism related training. Although only 30% expressed willingness to work	Response rate of 27% Staff training preferences were small group workshops with instructor led training and internet based training.

					during such an event. However, more than 69% indicated interest in future training opportunities,	
Jennings-Sanders 2005 USA	To explore nursing students' perceptions about disaster nursing To suggested recommendations for building the discipline of disaster nursing for nursing faculty and clinicians	A convenience sample of 51 nursing students Senior-year nursing students in a community health nursing class	Disaster Nursing Perception Questionnaire (qualitative) and Demographic Profile Form Questionnaire based on mass casualty educational competencies	Content analysis to determine certain words or concepts within texts Data analysed for meanings, relationships and inferences Questionnaire responses read multiple times, and independently, by 2 of the authors to ascertain message	Students had limited knowledge about what a disaster is, and a variety of opinions about what content should be included in the nursing curriculum Multiple definitions of disaster and lack of conceptualisation of what constitutes a disaster, mass casualty incident and disaster nursing. Limited information on educational approach to teach nursing students about disaster nursing.	Small sample size No clear methodology
Kilner, T. 2004. U.K.	To inform future curriculum development by gaining information on the desirable attributes of the ambulance technician, paramedic and clinical supervisor.		Delphi study	Factor analysis to explore inter-relations between variables or desirable attributes	Desirable attributes are similar to the generic benchmark statements (QAA). Need to revise the education and training curriculum for ambulance staff. Lack of skills necessary in modern healthcare system.	
Lee et al 2012. UK	Examination of the evidence-base and	Key stakeholders and opinion leaders	17 semi-structured	Grounded theory (standard	Interviewees identified greater gaps in	

	evidence requirements for emergency planning	(purposive sampling)	interviews	framework analysis techniques)	operational, than technical knowledge. Social and behavioural knowledge gaps were highlighted (risk and behaviour in emergencies). Gaps on how knowledge is developed and used.	
Linney, A et al 2011. UK	To find consensus amongst multi-agency chemical, biological, radiological, nuclear and explosive (CBRNe) experts on the factors that must be included in future NHS CBRNe competencies	43 experts (holding a job involving CBRNe planning, industry or academic)	Anonymised online Delphi study (2 rounds)	Qualitative data was gathered via an open-ended question and then content analysed to extract common themes. Initial data was used to construct a questionnaire for round 2	10 core training competencies were generated	Study cut short (ideally a 3rd round of questions), due to flu outbreak, study dead-line and ethic clearance challenges Are competencies suited for all health-care personnel (or pre-hospital/in-hospital) and in all regions? How can it be ensured that competencies are validated and used within Trust training?
Madge, S et al 2004 UK	To assess the current status of awareness/training of junior doctors in the event of a major incident	64 SpRs	Telephone questionnaire		Response rate 87.5% (56 respondents) 16% SpRs had been involved in a major incident 32% had undertaken some form of major incident training 11% of SpRs had been involved in a training exercise 45% of the SpRs felt confident in their role in	One region (out of a major city) Unsure of what training the Trust provided Unsure of speciality of respondents Unsure how long they have been working at the Trust

					the event of an incident No significant difference in training for differing specialities	
Milkhu, C et al 2008, UK	To audit knowledge of the major incident policy by clinical staff	307 nursing and medical staff in the hospital	12-question proforma (e-mail), designed to assess staff knowledge of the major incident policy	Comparative between grades and professions	Response rate of 34% 41% had read major incident plan 48% knew the average number of times the hospital was put on alert per year 70% knew the correct immediate action to be if a major incident is declared Less than 25% knew which action card they would be allocated during a major incident Fisher's exact test showed nurses were significantly more aware of the hospital policy than doctors	Low response rate – those who responded may be more interested in topic area No discussion on clinical area (? More response from acute and critical care areas) Nurses more aware – do they have different training to Doctors What training is in place within this Trust (and how often)?
Morrison & Cantanzaro (2010), USA	To determine if high-fidelity simulation positively impact on students emergency preparedness education	79 student nurses	Public health simulation scenario, with qualitative (verbal debrief) and quantitative data (seven-item Likert-type scale instrument) obtained		90.36% thought the purpose of the experience was clear 91.5% thought the importance of delivering safe care during a public health emergency was understood The students initially felt overwhelmed and anxious, but they realised the importance	No follow-up to determine effectiveness (for example, 6 months, 12 months on)

					of participating in emergency preparedness and applying their previously learned nursing skills	
Pelaccia et al 2009. France	Can teaching methods based on pattern recognition skill development optimise triage in mass-casualty incidents?	128 medical and nursing students	Assessment whilst performing triage during disaster medicine exercises, Half of them had been previously involved in a standard curriculum, whilst the remaining half have been exposed to specific teaching methods based on pattern recognition skill development.	Statistical data analysis (R V.2.5.1 software)	Pattern recognition skill development improves students' triage performances. Overtriage occurred in most categories.	Study with students. Future studies needed to assess impact on experienced clinicians.
Rebmann, T (2006)	A concept analysis to define the concept of nursing bioterrorism preparedness		Concept analysis – systematic literature review (1966 – 2005)	118 references were identified, 41 deemed relevant.	Lack of existing definition. Nursing bioterrorism preparedness is the continual process of nurses becoming better prepared to recognise and respond to a bioterrorism attack.	Further work needed on refinement and operationalisation.
Schmidt, C et al	Exploring nursing students' level of preparedness for disaster response	1348 nursing students from every US state (plus Guam, Puerto Rico and the Virgin Islands)	Descriptive online survey exploring a) the level of preparedness, b) the impact of disasters on	Survey monkey used for descriptive data (transferred into Excel). Frequency tables	Nursing students are not prepared for disasters and nurse educators need to develop strategies to prepare their students for	No relationships drawn re) type of programme, geographic location.

			nursing students and c) strategies to assist nursing students during disasters	summarised frequency of each score, cumulative frequency and the percentage and cumulative percentage of each variable. Descriptive statistics used to summarise responses to each questions	disasters	
Stevens et al 2010 Australia	To identify factors that support the CBRNE response readiness of paramedics	663 responders (to reflect the NSW paramedic population) responded (around 25% of total population)	Cross-sectional design Validated online survey instrument Sent via e-mail	Ratings formed a response readiness score Cronbach's alpha coefficients demonstrated internal consistency of each item was satisfactory Exploratory data analysis used frequency distribution for categorical variables, graphs and summary statistics for continuous variables to check the normality of the data	68.5% male 83% married 56.3% university degree Approx 50% have children at home 25% recently completed CBRN training (within last 3 years) 75% reported CBRNE incident response experience, compared to 43% of those without recent training 50.5% reported high personal concern regarding deployment to CBRNE incident 52% concern about family member in such an incident 72.4% reported high	No terrorist activity in this area, during the study time-frame Measures perceived readiness

					levels of personal resilience Results support theory that the provision, timeliness and quality of CBRNE training is associated with both willingness to respond and greater confidence in operational competencies	
Whetzel, E. Walker-Cillo, G. Chan, G. Trivett, J. Hamilton & Morristown 2013 USA	To assess nurses' perception of their role in a disaster and their perceived susceptibility to a disaster & basic knowledge and role preparation was reviewed	Emergency Nurses attending the New Jersey ENA Emergency Care Conference in Atlantic City in March 2007	Descriptive survey using survey methodology. A 56-question survey, including 16 demographic questions. Answers provided by a Likert-type scale (with yes/no/don't know and multiple choice options)		Many emergency nurses have not taken basic actions to prepare themselves for a disaster, either personally or professionally	
Worrall 2012 UK	To determine if emergency care staff are prepared for disaster?	Minor injury unit nurses (33) and health-care assistants (8)	Using an adapted Emergency Preparedness Information Questionnaire (EPIQ) – Wisniewski et al (2004b)	Paired t-test and intermediate values (pre and post educational intervention)	The adapted EPIQ is a robust instrument for measuring self-assessed familiarity. Staff more familiar with triage (as part of day-to-day role), less familiar with isolation, decontamination and quarantine.	Self-assessments should be viewed with caution, as subjective. Completing the same questionnaire twice results in familiarity. Small sample size and not representative as MIU not linked with ED.

Appendix 3

Glossary of terms

The Act	The Civil Contingencies Act 2004 established a single framework for civil protection in the United Kingdom. Part 1 of the Act establishes a clear set of roles and responsibilities for Local Responders; Part 2 of the Act establishes emergency powers
Capability	A demonstrable ability to respond to, and recover from, a particular threat or hazard
Catastrophic emergency	An emergency which has an exceptionally high and potentially widespread impact and requires immediate central government direction and support
Category 1 responder	A person or body listed in Part 1 of Schedule 1 to the Civil Contingencies Act. These bodies are likely to be at the core of the response to most emergencies. As such, they are subject to the full range of civil protection duties in the Act.
Category 2 responder	A person or body listed in Part 3 of Schedule 1 to the Civil Contingencies Act. These are co-operating responders who are less likely to be involved in the heart of multi-agency planning work, but will be heavily involved in preparing for incidents affecting their sectors. The Act requires them to co-operate and share information with other Category 1 and 2 responders.
Civil protection	Organisation and measures, under governmental and other authority, aimed at preventing, abating or otherwise countering the effects of emergencies for the protection of the civilian population and property.
Command	The exercise of vested authority that is associated with a role or rank within an organization, to give direction in order to achieve defined objectives.
Consequences	Impact resulting from the occurrence of a particular hazard or threat, measured in terms of the numbers or lives lost, people injured, the scale of damage to property and the disruption to essential services and commodities.
Control	The application of authority, combined with the capability to manage resources, in order to achieve defined objectives.

Crisis	An inherently abnormal, unstable and complex situation that represents a threat to the strategic objectives, reputation or existence of an organization.
Critical function	A service or operation the continuity of which a Category 1 responder needs to ensure, in order to meet its business objectives and/or deliver essential services.
Disaster	Emergency (usually but not exclusively of natural causes) causing or threatening to cause widespread and serious disruption to community life through death, injury, and/or damage to property and/or the environment.
Disaster cycle	Sequence of four civil protection phases: preparedness, mitigation, response and recovery used in some guidance documents and academic papers.
Emergency	An event or situation that threatens serious damage to human welfare in a place in the UK or to the environment of a place in the UK or to the environment of a place in the UK, or war or terrorism which threatens serious damage to the security of the UK. To constitute an emergency this event or situation must require the implementation of special arrangements by one or more Category 1 responder.
Emergency Plan	A document or collection of documents that sets out the overall framework for the initiation, management, co-ordination and control of personnel and assets to reduce control or mitigate the effects of an emergency.
Emergency Planning (EP)	Aspect of Integrated Emergency Management concerned with developing and maintaining procedures to prevent emergencies and to mitigate the impact when they occur.
Emergency planning cycle	A continuous process of assessing the risk of and preparing for emergencies, supported by procedures to keep staff in readiness, and to review and validate plans, revising them, if necessary, following emergency exercises or response operations.
Emergency preparedness	The extent to which emergency planning enables the effective and efficient prevention, reduction, control and mitigation of, and response to emergencies.
Exercise	A simulation designed to validate organisations' capability to manage incidents and emergencies. Specifically exercises will seek to validate training undertaken and the procedures and systems within emergency or business continuity plans.

Generic local risk assessment	An assessment provided by central government to Category 1 responders via the Local Risk Assessment Guidance, containing information on the likelihood and impact of generic threats and hazards.
Generic (emergency) plan	A single emergency plan developed to enable an organisation's response to emergencies arising from a wide range of risks. Generic plans are usually specific to individual organisations, but in some cases they will be developed as multi-agency plans to enable a joint response for use by a range of emergency responder organisations.
Hazardous Area Response Teams (HART)	Specifically recruited and trained personnel who provide the ambulance response to major incidents involving hazardous materials, or which present hazardous environments, that have occurred as a result of an accident or have been caused deliberately.
Hazard	Accidental or naturally occurring (i.e. non-malicious) event or situation with the potential to cause death or psychological harm, damage or losses to property, and/or disruption to the environment and/or to economic, social and political structures.
Health Protection Agency (HPA)	The Agency identifies and responds to health hazards and emergencies caused by infectious disease, hazardous chemicals, poisons or radiation. It also makes sure that the nation if ready for future threats to health that could happen naturally, accidently or deliberately.
Impact	The scale of the consequences of a hazard or threat expressed in terms of a reduction in human welfare, damage to the environment and loss of security.
Incident	Event or situation that requires a response from the emergency services or other responders.
Integrated Emergency Management (IEM)	Multi-agency approach to emergency management entailing six key activities: anticipation, assessment, prevention, preparation, response and recovery.
Level of emergency	Cabinet Office (2010) Central Government Arrangements for Responding to an Emergency defines three levels of emergency of national significance. These are, in descending order of magnitude, catastrophic emergency (Level 3); serious emergency (Level 2); significant emergency (Level 1). Below the national level there is a further category, local emergency, the response to which is

	conducted by local responders, where necessary in conjunction with local government.
Major Incident	Event or situation requiring a response under one or more of the emergency services' major incident plans. Note: while an 'emergency' as specifically defined under the CCA and 'major incident' are not synonymous, they are both significant events with serious consequences. It does not automatically follow from the declaration of a major incident that it will meet the criteria for a CCA-defined emergency, but the definitions and criteria overlap and in many cases an emergency will be a major incident and vice versa.
Mass casualty incident	An incident (or series of incidents) causing casualties on a scale that is beyond the normal resources of the emergency services.
Multi-agency plan	A plan for the coordination and integration of the response to an emergency by a number of organisations. Note: a multi-agency is usually prepared and maintained by a lead responder on behalf of the other organisations.
Plan maintenance	Procedures for ensuring that emergency plans are appropriate, up to date and kept in readiness for emergencies.
Plan validation	Measures to ensure that an emergency plan meets the purpose for which it was designed. Validation may include a range of measures, including various forms of emergency exercises and tests.
Planning assumptions	Descriptions of the types and scales of consequences for which organisations should be prepared to respond. These will be informed by the risk assessment process.
Preparedness	Process of preparing to deal with known risks and unforeseen events or situations that have the potential to result in an emergency.
Preparedness phase	On-going phase focused on preparedness for emergencies and disasters.
Public awareness	A level of knowledge within the community about risks and preparedness for emergencies, including actions the public authorities will take and actions the public should take.

Rapid onset emergency	Emergency which develops quickly, and usually with immediate effects, thereby limiting the time available to consider response options (in contrast to rising tide emergency).
Readiness level	An assessment of the extent to which a capability meets the agreed capability target.
Rendezvous point	Point to which all vehicles and resources arriving at the outer cordon are directed for logging, briefing, equipment issue and deployment.
Resilience	Ability of the community, services, area or infrastructure to detect, prevent, and, if necessary to withstand, handle and recover from disruptive challenges.
Response	Decisions and actions taken in accordance with the strategic, tactical and operational objectives defined by emergency responders. At a high level these will be to protect life, contain and mitigate the impacts of the emergency and create the conditions for a return to normality.
Risk	A measure of the significance of a potential emergency in terms of its assessed likelihood and impact.
Risk appetite	Willingness of an organization to tolerate a defined level of risk.
Risk assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood and impacts, and then combining these to provide an overall assessment of risk, as a basis for further decisions and action.
Risk management	All activities and structures directed towards the effective assessment and management of risks and their potential adverse impacts.
Risk priority	The relative importance of the treatment(s) required for the management of the risk, based on the risk rating and the additional capabilities required to manage risk.
Risk treatment	Process of determining those risks that should be controlled (by reducing their likelihood and/or putting impact mitigation measures in place) and those that will be tolerated at their currently assessed level.

Serious emergency	Second highest level of emergency requiring central government direction.
Significant emergency	Lowest level of emergency requiring central government support through a nominated lead government department.
Situational awareness	The state of individual and/or collective knowledge relating to past and current events, their implications and potential future developments.
Threat	Intent and capacity to cause loss of life or create adverse consequences to human welfare (including property and the supply of essential services and commodities), the environment and security.
Threat assessment	A component of the civil protection risk assessment process in which identified threats are assessed for risk treatment.
Triage	Assessment of casualties and allocation of priorities by the medical or ambulance staff at a casualty clearing station and/or a receiving hospital.
Validation	Measures to ensure that plans, procedures and other emergency response measures meet the purpose for which they were designed.
Vulnerability	The susceptibility of individuals or a community, services or infrastructure to damage or harm arising from an emergency or other incident.

Taken from:- www.cabinetoffice.gov.uk/cplexicon (accessed 07/01/15)

Appendix 4

History of Disasters

Natural

Year	Disaster	Number dead
1970	Bangladesj Cyclone	200,000
1980	Dallas heatwave	1,200
1985	Columbia Volcano	25,000
2004	Asian Tsunami	153,000
2005	Hurricane Katrina	1383
2006	Phillipines mud-slide	950

Industrial

Year	Disaster	Dead	Injured
1974	Flixborough explosion	28	36
1984	Bhopal, India gas explosion	3,828	
1986	Chernobyl	56	
1988	Piper Alpha Rig North Sea	164	25
2000	Firework factory – Netherlands	17	47
2005	Buncefield		40+

Transport

Year	Disaster	Dead	Injured
1987	Kings Cross fire	31	60
1988	Clapham rail crash	35	123
1989	Kegworth air crash	47	79
1992	Air Crash Amsterdam	34	7
1993	Ferry Estonia sunk	860	137
1999	Ladbroke Grove rail crash	31	400
2002	Potters Bar rail crash	31	400

2007	Carlisle rail crash	1	8

Mass Gathering events

Year	Disaster	Dead	Injured
1981	Disco fire, Ireland		92+
1989	Hillborough crush	96	200
1991	Riot Orkney, South Africa	40	50
1996	Crush – Guatemala	84	150
2001	Collapse Johannesburg	43	155
2001	Crush Ghana	123	
2008	Disco fire, China	43	88

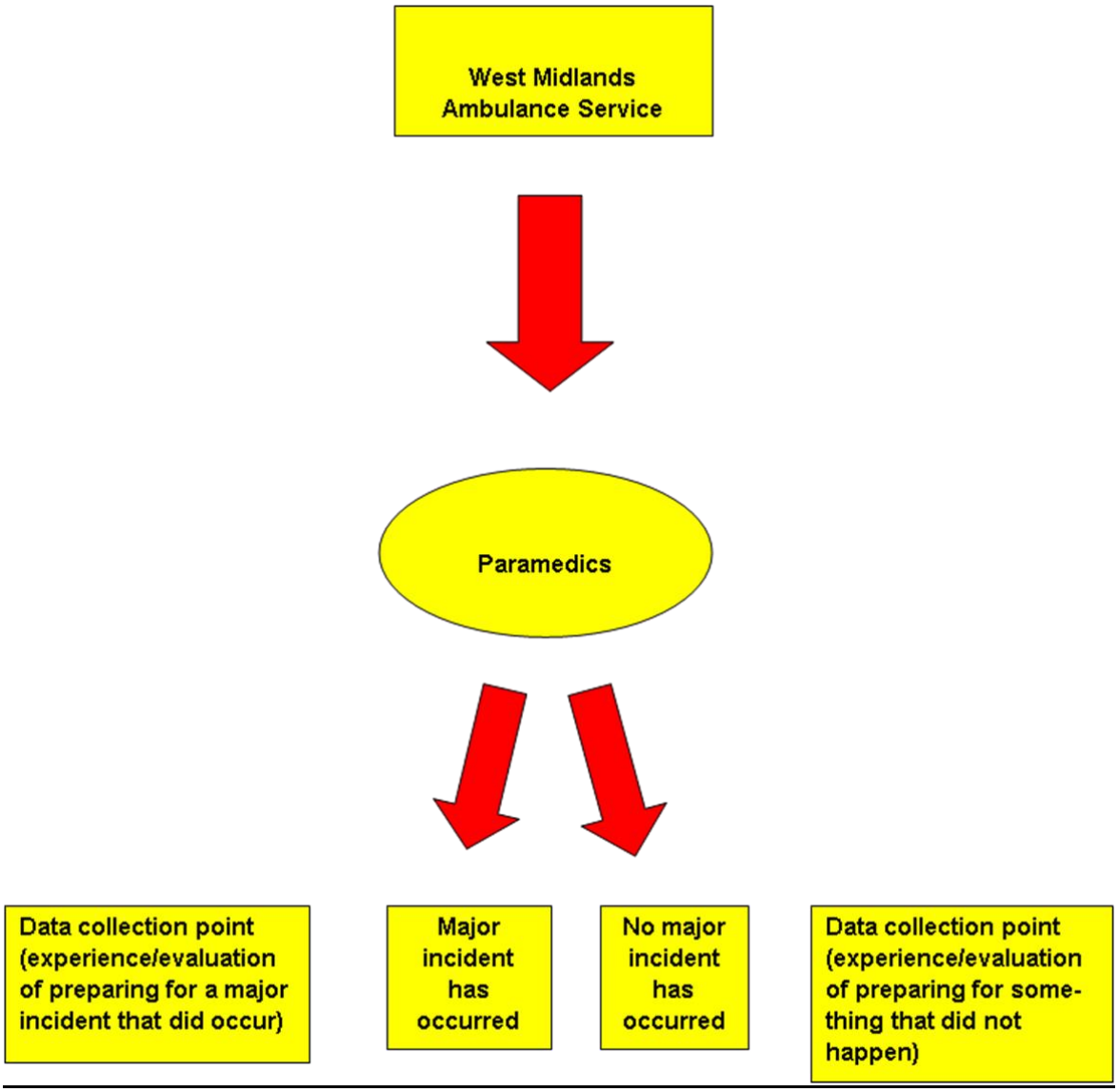
Terrorist

Year	Disaster	Dead	Injured
1993	Warrington	2	50+
1993	Bishopsgate	1	44
1998	Omagh bomb	29	300+
2001	New York City, Washington D.C and Shanksville, PA	3000+	
2004	Beslan School hostages	344	
2005	London Bombings	52	700
2007	Glasgow airport	1 (suicide bomber)	

Taken from:- Bleetman, T. Lecture notes – Preparing for disaster.

Appendix 5

Process Flow Chart



Appendix 6 – Research Protocol

BIOMEDICAL & SCIENTIFIC RESEARCH ETHICS COMMITTEE (BSREC)

Protocol/Proposal Guidance

Title

Developing the concept of emergency preparedness through the experience of the paramedic.

Lay Summary

The aim of the study is to develop an understanding of emergency preparedness through the experiences of pre-hospital health-care professionals. The western world has witnessed the numerous man-made and natural disasters over the past decade. Planning for this type of event creates an enormous challenge for emergency personnel, as it is unscheduled and often overwhelming for both the individual health-care worker and their employer. Within their role as paramedics, mandatory training occurs to deal with these incidents. However, little is known about the paramedics experience and what motivates them to engage with this area. This project aims to develop an understanding of emergency preparedness through the experience of the paramedic.

Background

The speciality of emergency planning is in its infancy. Mandatory guidance is prescribed regarding training frequency and some research has occurred looking at nursing and medical staff knowledge acquisition but it is surprising that little evidence is available examining how the components of knowledge, practice and training influence emergency planning as a whole in the field of pre-hospital care or how the individual practitioner experiences this process. The majority of studies are audit based, with limitations such as small sample size, evaluating knowledge recall, convenience samples and utilising poor methodological process. The formation of a clear definition and supporting theoretical concept will enhance knowledge in this area. This should enrich educational content and process and improve outcomes for a disaster event, which in turn should maximise the best outcome for the most people.

Aims/Objectives

Aim
To develop an understanding of the concept of emergency preparedness, through the experience of paramedics.

Research Questions

What are the experiences, in their role as individual paramedics, of emergency preparedness?

What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?

How do paramedics perceive and use emergency preparedness evidence?

Design/Methodology

Design: Qualitative research using interpretative phenomenological analysis.

Methods: One on one interview. Each interview approximately one to two hours.

Sample size: up to twenty paramedics. This small homogenous sample is common in IPA research and has the aim to "illustrate, inform and master themes by firmly anchoring findings in direct quotes from the participant account" (Pringle et al, 2011a, p21). A sample size of up to twenty participants reflects the individual and detailed components of IPA, and enables the subtle analysis of words and phrases which is required for this in-depth review of the chosen experience (Collins & Nicolson, 2002).

Data analysis: this will follow the template for data analysis sent out in Smith et al (2009), where emerging themes are noted and linked and then master-superordinate themes are identified. Texts will then be examined closely for greater depth of meaning and interpretation and a summary table for the group, with a detailed interpretative reflexive written account will be developed.

Recruitment: will be via a paper poster on the ambulance stations notice board, a message on the NHS Trusts intranet site and snowball sampling.

Withdrawal from the study: Participation in this study is entirely voluntary. Refusal to participate will not impact the individual in any

way. The participant may withdraw from the study at any point, up to 1 month after the interview.

Informed consent: Written consent will be obtained from all participants. This consent is for participation in the interview, as well as the inclusion of verbatim transcripts in the final report.

Ethical Considerations

Informed Consent

A Participant Information Sheet will be supplied to all research subjects, in a language that is understandable to them. Written consent will be obtained from all participants. This consent is for participation in the interview, as well as the inclusion of verbatim transcripts in the final report. An opportunity for face-to-face dialogue, to discuss any concerns that they may have before signing the consent form is part of this informed consent process. The participant will have a right to withdraw at any time before commencement of the study.

Participant Confidentiality and Data Security

Interview data will be transcribed and reported in such as way that all participants will remain anonymous (a pseudonym will be given to any quotes that are used). A unique identifier code will be assigned to each participant in order to identify data. All interviews will be transcribed onto a password protected database, with only a unique code identifer. All consent forms will be stored in a fireproof, lockable cupboard, separately from the other data. All participant details (names and contact details), together with the identifier codes, will be stored separately.

Data (both raw interview recordings and associated paperwork) will be stored for 10 years in a locked cupboard within my office (RC407, Richard Crossman building, Coventry University).

Data kept on a hard drive will be anonymised and password protected.

Other Considerations:

Right of Withdrawal

Participation in this study is entirely voluntary. Refusal to participate will not impact the individual in any way. You may withdraw from the study at any point.

Process for dealing with sensitive disclosures

It is unlikely that there will be any information discussed that breaches duty of care as the study explores individual's experience of emergency preparedness. If such a disclosure is made, it is my duty of care (as a Registered Nurse), to pass this information onto a relevant individual, such as a Senior Ambulance Officer.

Benefits and risks

It is envisaged that the information obtained via this study will improve emergency preparedness (primarily training for pre-hospital personnel) in the future. A report will be sent to the Ambulance Service on completion on this research.

If a major incident occurs before data collection, recalling information about this incident during the interview may cause distress for the respondent. In addition, participants need to be able to recount the phenomenon in their own terminology, but this open interview style may reveal more than initially anticipated so the study may become more intrusive. The interviews will be conducted in a supportive manner to minimise the risk of distress. A decision will be taken to stop the interview if the respondent is perceived to be in distress of requests that the interview to be stopped at any time.

Financing

Course fees paid by employer (Coventry University). No other funding secured for this study.

Dissemination and Implementation

The results from this study may be presented at suitable professional conference and in academic publications. In addition, a report of this research will be sent to the Ambulance Service involved in the research.

References

Collins & Nicolson (2002). The meaning of 'satisfaction' for people with dermatological problems. Reassessing approaches to qualitative health psychology research. Journal of Health Psychology. 7. pp 613 – 629.
Pringle et al (2011a). Interpretative phenomenological analysis: a discussion and critique. Nurse Researcher. 18, 3, pp 20 – 24.

Appendices

Consent form , interview schedule,
Participant Information Sheet, WMAS NHS R & D form

Appendix 7 - Warwick BSREC approval letter

14th January 2014

Warwick Medical School

PRIVATE
Alison Day
Education and Development
WMS
University of Warwick
Coventry
CV4 7AL

Dear Alison,

Study Title and BSREC Reference: *Developing the concept of emergency preparedness through the experience of the paramedic* REGO-2013-581

Thank you for submitting your revisions to the above-named project to the University of Warwick Biomedical and Scientific Research Ethics Sub-Committee for Chair's Approval.

I am pleased to confirm that I am satisfied that you have met all of the conditions and your application meets the required standard, which means that full approval is granted and your study may commence.

I take this opportunity to wish you success with the study and to remind you any substantial amendments require approval from the committee before they can be made. Please keep a copy of the signed version of this letter with your study documentation.

Yours sincerely,

P.P. Graham Hewitt

David Davies
Chair
Biomedical and Scientific
Research Ethics Sub-Committee

Biomedical and Scientific Research Ethics Subcommittee
A010 Medical School Building
Warwick Medical School,
Coventry, CV4 7AL.
Tel: 02476-151875
Email: BSREC@Warwick.ac.uk

THE UNIVERSITY OF WARWICK

Appendix 8 - Warwick BSREC sponsorship letter

Warwick
Medical School

Alison Day
Education and Development
Warwick Medical School
University of Warwick
Coventry
CV4 7AL
United Kingdom

15th January 2014

Project Title: Developing the concept of emergency preparedness through the experience of the paramedic
Chief Investigator: Alison Day
Our Ref: REGO-2013-581

Dear Alison,

I confirm that the University of Warwick will act as Research Sponsor for the above project, in accdordance with the Department of Health's Research Governance Framework for Health and Social care (2005), and, where appropriate, the Medicines For Human Use (Clinical Trials) Regulations (2004).

Any researcher involved in the project is required at all times to comply with the University of Warwick's Research Code of Practice.

Best wishes

Graham Hewitt
Research Ethics and Governance Manager

Dean's Office & Professional Support Services
Warwick Medical School
A010 Medical School Building
The University of Warwick
Coventry
CV4 7AL

T: + 44 (0) 24 7615 1827
E: G.J.Hewitt@warwick.ac.uk
W: www.warwick.ac.uk/wms

THE UNIVERSITY OF
WARWICK

Appendix 9 - WMAS R & D Approval letter

West Midlands Ambulance Service NHS
NHS Trust

West Midlands (South) Comprehensive Local Research Network
Fourth Floor, West Wing (ACF40002)
University Hospitals Coventry & Warwickshire NHS Trust
University Hospital
Clifford Bridge Road
Coventry
CV2 2DX

4th February 2014

Alison Day
7 Cicero Approach
Heathcote
Warwick
CV34 6EA

Dear Alison

Project Title: Developing the concept of emergency preparedness through the experience of the paramedic
R&D Ref: WMAS091213
REC Ref: N/A

I am pleased to inform you that the R&D review of the above project is complete, and NHS permission has been granted for the study at West Midlands Ambulance Service NHS Trust. The details of your study have now been entered onto the Trust's database.

The permission has been granted on the basis described in the application form, protocol and supporting documentation. The documents reviewed were:

Document	Version	Date
R&D form	77434/551912/14/92	-
SSI form	77434/551915/6/689/101356/289594	
Protocol	2	09/01/2014
Participant Information Sheet	3.0	23/01/2014
Consent Form	3.0	23/01/2014
Recruitment poster	-	-
Proposed interview schedule	-	-

All research must be managed in accordance with the requirements of the Department of Health's Research Governance Framework (RGF), to ICH-GCP standards (if applicable) and to NHS Trust policies and procedures. Permission is only granted for the activities agreed by the relevant authorities.

Please note: You are required to provide West Midlands Ambulance Service NHS Trust with a report of the study findings once your PhD has been submitted, and thus before the results of the study are presented or published.

All amendments (including changes to the local research team and status of the project) need to be submitted to the REC and the R&D office in accordance with the guidance in IRAS. Any urgent safety measures required to protect research participants against immediate harm can be implemented immediately. You should notify the R&D Office within the same time frame as any other regulatory bodies.

It is your responsibility to keep the R&D Office and Sponsor informed of all Serious Adverse Events and to ensure that they are reported according to the Trust Clinical Incident policy, where required. All SAEs must be reported within the timeframes detailed within ICH-GCP statutory instruments and EU directives.

In order to ensure that research is carried out to the highest governance standards, the Trust employs the services of an external monitoring organisation to provide assurance. Your study may be randomly selected for audit at any time, and you must co-operate with the auditors. Action may be taken to suspend Trust approval if the research is not run in accordance with RGF or ICH-GCP standards, or following recommendations from the auditors.

You will be sent an annual progress report which must be completed in order to ensure that the information we hold on our database remains up to date, in line with RGF requirements.

I wish you well with your project. Please do not hesitate to contact me should you need any guidance or assistance.

Yours sincerely

R. L. Da

Rachel Davis
Acting Assistant RM&G Project Manager

Cc: Dr Sophie Staniszewska, Academic Supervisor
Dr Ian Bullock, Academic Supervisor
University of Warwick, Sponsor
Gill Price, Trust R&D Manager

Appendix 10 - WMAS Access letter

West Midlands Ambulance Service NHS Trust

West Midlands (South) Comprehensive Local Research Network
Fourth Floor Rotunda
University Hospitals Coventry & Warwickshire NHS Trust
University Hospital
Clifford Bridge Road
Coventry
CV2 2DX

Tel: 01564 711 606
Fax: 024 7696 6201

4th February 2014

Alison Day

Dear Alison

Re: Developing the concept of emergency preparedness through the experience of the paramedic

Letter of access for research

In accepting this letter, West Midlands Ambulance Service NHS Trust confirms your right of access to conduct research through their organisation for the purpose and on the terms and conditions set out below. This right of access commences on 4th **February 2014** and ends on 19th **June 2015** unless terminated earlier in accordance with the clauses below.

You have a right of access to conduct such research as confirmed in writing in the letter of permission for research from West Midlands Ambulance Service NHS Trust. Please note that you cannot start the research until the Principal Investigator for the research project has received a letter from us giving confirmation from West Midlands Ambulance Service NHS Trust of their agreement to conduct the research.

The information supplied about your role in research at West Midlands Ambulance Service NHS Trust has been reviewed and you do not require an honorary research contract with this NHS organisation. We are satisfied that such pre-engagement checks as we consider necessary have been carried out. Evidence of checks should be available on request to this NHS organisation.

You are considered to be a legal visitor to West Midlands Ambulance Service NHS Trust premises. You are not entitled to any form of payment or access to other benefits provided by this NHS organisation to employees and this letter does not give rise to any other relationship between you and this NHS organisation, in particular that of an employee.

While undertaking research through West Midlands Ambulance Service NHS Trust you will remain accountable to your employer The University of Warwick but you are required to

follow the reasonable instructions of Gill Price (R&D Manager) in this NHS organisation or those instructions given on their behalf in relation to the terms of this right of access.

Where any third party claim is made, whether or not legal proceedings are issued, arising out of or in connection with your right of access, you are required to co-operate fully with any investigation by this NHS organisation in connection with any such claim and to give all such assistance as may reasonably be required regarding the conduct of any legal proceedings.

You must act in accordance with West Midlands Ambulance Service NHS Trust policies and procedures, which are available to you upon request, and the Research Governance Framework.

You are required to co-operate with West Midlands Ambulance Service NHS Trust in discharging its/their duties under the Health and Safety at Work etc Act 1974 and other health and safety legislation and to take reasonable care for the health and safety of yourself and others while on West Midlands Ambulance Service NHS Trust premises. You must observe the same standards of care and propriety in dealing with patients, staff, visitors, equipment and premises as is expected of any other contract holder and you must act appropriately, responsibly and professionally at all times.

If you have a physical or mental health condition or disability which may affect your research role and which might require special adjustments to your role, if you have not already done so, you must notify your employer and the Trust's Occupational Health Department prior to commencing your research role at this NHS organisation.

You are required to ensure that all information regarding patients or staff remains secure and *strictly confidential* at all times. You must ensure that you understand and comply with the requirements of the NHS Confidentiality Code of Practice and the Data Protection Act 1998. Furthermore you should be aware that under the Act, unauthorised disclosure of information is an offence and such disclosures may lead to prosecution.

You should ensure that, where you are issued with an identity or security card, a bleep number, email or library account, keys or protective clothing, these are returned upon termination of this arrangement. Please also ensure that while on the organisations premises you wear your ID badge at all times, or are able to prove your identity if challenged. Please note that this NHS organisation does not accept responsibility for damage to or loss of personal property.

West Midlands Ambulance Service NHS Trust may revoke this letter and terminate your right to attend this organisation at any time either by giving seven days' written notice to you or immediately without any notice if you are in breach of any of the terms or conditions described in this letter or if you commit any act that we reasonably consider to amount to serious misconduct or to be disruptive and/or prejudicial to the interests and/or business of this NHS organisation or if you are convicted of any criminal offence. You must not undertake regulated activity if you are barred from such work. If you are barred from working with adults or children this letter of access is immediately terminated. Your employer will immediately withdraw you from undertaking this or any other regulated activity and you MUST stop undertaking any regulated activity immediately.

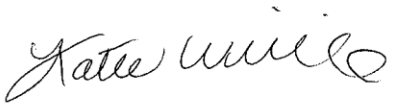
Your substantive employer is responsible for your conduct during this research project and may in the circumstances described above instigate disciplinary action against you.

West Midlands Ambulance Service NHS Trust will not indemnify you against any liability incurred as a result of any breach of confidentiality or breach of the Data Protection Act

1998. Any breach of the Data Protection Act 1998 may result in legal action against you and/or your substantive employer.

If your current role or involvement in research changes, or any of the information provided in your Research Passport changes, you must inform your employer through their normal procedures. You must also inform your nominated manager in this NHS organisation.

Yours sincerely



Katie Williams
Research Study Manager

cc: HR department of the substantive employer

Appendix 11 - Recruitment poster

University of Warwick

Royal College of Nursing Institute

Developing the concept of emergency preparedness through the experience of the paramedic

We are looking for volunteers to take part in a study exploring emergency preparedness, through the experience of paramedics.

As a participant in this study, you would be asked to take part in one face-to-face interview, lasting no longer than ninety minutes. We would like to talk to you about your understanding and thoughts of emergency preparedness, within your role as a paramedic.

The research is integral to PhD study (Warwick University), that is aimed at clarifying what is involved in emergency preparedness and to inform future training.

For more information about this study, or to volunteer for this study please contact:-

Alison Day (Senior Lecturer in Emergency Nursing)
Tel:- 024 7679 5904
E-mail:- hsx482@coventry.ac.uk

Appendix 12 – interview schedule

Interview schedule – indicative questions

'Emergency Preparedness', understanding the concept through the experiences of pre-hospital health-care professionals. A qualitative study.

Research Aim

- To develop an understanding of the concept of emergency preparedness, through the experience of paramedics.

Research Questions

- What are the experiences, in their role as individual paramedics, of emergency preparedness?
- What are the motivations, barriers and enablers for paramedics in engaging in emergency preparedness?
- How do paramedics perceive and use emergency preparedness evidence?

Focus on individual's experience of emergency planning

- What is it like for you to work in an emergency environment?
- How does that feel, what were your thoughts when that happened, tell me more about that, how does that work with what you said earlier in relation to....
- What do you do to prepare?
- Tell me about how you get ready for an emergency?
- What is it like to be constantly prepared for a major emergency?
- What are you experiences of emergency preparedness?
- What does the term 'emergency preparedness' mean to you?
- What do you feel are the important components of emergency preparedness?
- What are the important factors that need to be in place for people to engage in emergency preparedness?

- Describe the equipment that you have prepared for a mass casualty incident (and what that equipment means to you)?
- Is there any-thing else you would like to add about your experience of emergency preparedness training?
- How do you feel this area needs to be developed?
- What should the evidence-base look like?
- What is your vision for the future for emergency preparedness?
- What feels comfortable for you to engage in?
- How do you feel about preparing?
- What motivates you to engage in emergency preparedness?

Prompts...

- Tell me more about that
- Why do you feel like that?
- How do you manage fear?
- How would you like to define it?
- Tell me what you mean by….
- How does that make you feel?
- What do you feel that way?
- Why is that a problem?
- How and why do you perceive this..?
- Tell me what that means to you
- Why does it feel difficult/challenging?
- Tell me more about what you said…

Appendix 13 – Participant Information Sheet

PARTICIPANT INFORMATION LEAFLET

Study Title: Developing the concept of emergency preparedness through the experience of the paramedic.

Investigator: Alison Day

Introduction

You are invited to take part in a Research study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take the time to read the following information carefully. Talk to others about the study if you wish.

(Part 1 tells you the purpose of the study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study).

Please ask us if there is any-thing that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

PART 1

What is the study about?

The aim of the study is to develop an understanding of emergency preparedness through the experiences of pre-hospital health-care professionals. We would like to talk to you about your understanding and thoughts on emergency preparedness, within your role as a pre-hospital health-care worker.

Do I have to take part?

It is entirely up to you to decide. We will describe the study and go through this information sheet, which we will give you to keep. If you choose to participate, we will ask you to complete a consent form, explaining your role in the study. You will be free to withdraw up to a month after the interview.

What will happen to me if I take part?

You will be asked to participate in one interview exploring your views and opinions on the topic of your professional role and the topic area of emergency preparedness. It is anticipated that each interview will take around one to two hours and will be audio-recorded.

What are the possible disadvantages, side effects, risks, and/or discomforts of taking part in this study?
There is the potential that you may recall, during the interview, content which is distressing to you. The interviews will be conducted in a supportive manner to minimise the risk of distress. A decision will be taken to stop the interview if the respondent is perceived to be in distress or if you request the interview to be stopped.

What are the possible benefits of taking part in this study?
It is hoped that any data obtained will help improve emergency preparedness (primarily training for pre-hospital personnel) in the future.

Expenses and payments
No expenses or payment will be made in respect to this study.

What will happen when the study ends?
It is anticipated that the results will be available from March 2015. This research forms a PhD Nursing (Royal College of Nursing Institute/Warwick University) and anonymised sections of transcript will appear in the final dissertation. It is anticipated that the results of this study may be presented at suitable professional conferences and in academic publications.

Will my taking part be kept ethical?
Yes. We will follow strict ethical and legal practice and all information about you will be handled in confidence. Further details are included in Part 2.

What if there is a problem?
Any complaint about the way you have been dealt with during the study or any possible harm that you might suffer will be addressed. Detailed information is given in Part 2.

This concludes Part 1.

If the information in Part 1has interested you and you are considering participation, please read the additional information in Part 2 before making any decision.

PART 2

Who is organising and funding the study?
This study is being conducted for a PhD Nursing (Royal College of Nursing and The University of Warwick). No external funding is secured.

What will happen if I don't want to carry on being part of the study?
Participation in this study is entirely voluntary. Refusal to participate will not affect you in any way. If you decide to take part in the study, you will need to sign a consent form, which states that you have given your consent to participate.

You will be free to withdraw up to a month after the interview.

You have the right to withdraw from the study completely and decline any further contact by study staff after you withdraw.

What if there is a problem?
This study is covered by the University of Warwick's insurance and indemnity cover. If you have an issue, please contact Jo Horsburgh (details below).

Who should I contact if I wish to make a complaint?
Any complaint about the way you have been dealt with during the study or any possible harm you might have suffered will be addressed. Please address your complaint to the person below, who is a Senior University of Warwick official entirely independent of this study:
Jo Horsburgh
Deputy Registrar
Deputy Registrar's Office
University of Warwick
Coventry, UK. CV4 8UW
T: +00 44 (0) 2476 522 713 E: J.Horsburgh@warwick.ac.uk

Will my taking part be kept confidential?
Interview data will be transcribed and reported in such a way that all participants will remain anonymous (a synonym will be given to any quotes that are used). A unique identifier code will be assigned to each participant in order to identify data. All interviews will be transcribed onto a password protected database, with only a unique code identifier. All consent forms will be stored in a fireproof, lockable cupboard, separately from the other data. All participant details (names and contact details), together will the identifier codes, will be stored separately from the data.

Only the main researcher (Alison Day) will have access to participants' personal data, which is their names, contact details and related demographics.

What will happen to the results of the study?
It is anticipated that the results will be available from March 2015. This research forms a PhD Nursing (Royal College of Nursing Institute/Warwick University) and anonymised sections of transcript will appear in the final dissertation. It is anticipated that the results of this study may be presented at suitable professional conferences and in academic publications.

Who has reviewed the study?
This study has been reviewed and given favourable opinion by the University of Warwick's Biomedical and Scientific Research Ethics Committee (BSREC): REGO 2013-581. Approval granted 14/01/14. In addition, the study has been approved by NHS R & D.

What if I want more information about the study?
If you have any questions about any aspect of the study or your participation in it not answered by this participant information leaflet, please contact:
Alison Day
Alison.Day@warwick.ac.uk
Tel:- +44 24 7679 5904

Thank you for taking the time to read this participant information leaflet.

Appendix 14 – Consent Form

CONSENT FORM

(Biomedical and Scientific Research Ethics Committee) Study Number:

Title of Project: Developing the concept of emergency preparedness through the experience of the paramedic.

Name of Researcher(s): Alison Day (Researcher). Academic Supervisors:- Dr Sophie Staniszewska & Dr Ian Bullock

Please initial all boxes

1. I confirm that I have read and understand the information sheet dated (version 3.0) for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my legal rights being affected. ☐
3. I consent to my interview being recorded . ☐
4. I understand that relevant sections of data collected during the study, may be looked at by individuals from The University of Warwick where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records. ☐
5. I agree to take part in the above study and for the anonymised transcripts to appear in the final thesis and related professional presentations/publications. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

Appendix 15 – Example from research diary

1hrs 23mins 42seconds
6907 WORDS

PARTICIPANT 7

Meetings Planner

Meeting

Venue HART hub, Oldbury, Birmingham

Start 10 am Finish

Objectives

CONTACT:- Saw advert in weekly team brief (on-line). Interested in participating as ① HART team supervisor ② studying MSc emergency planning

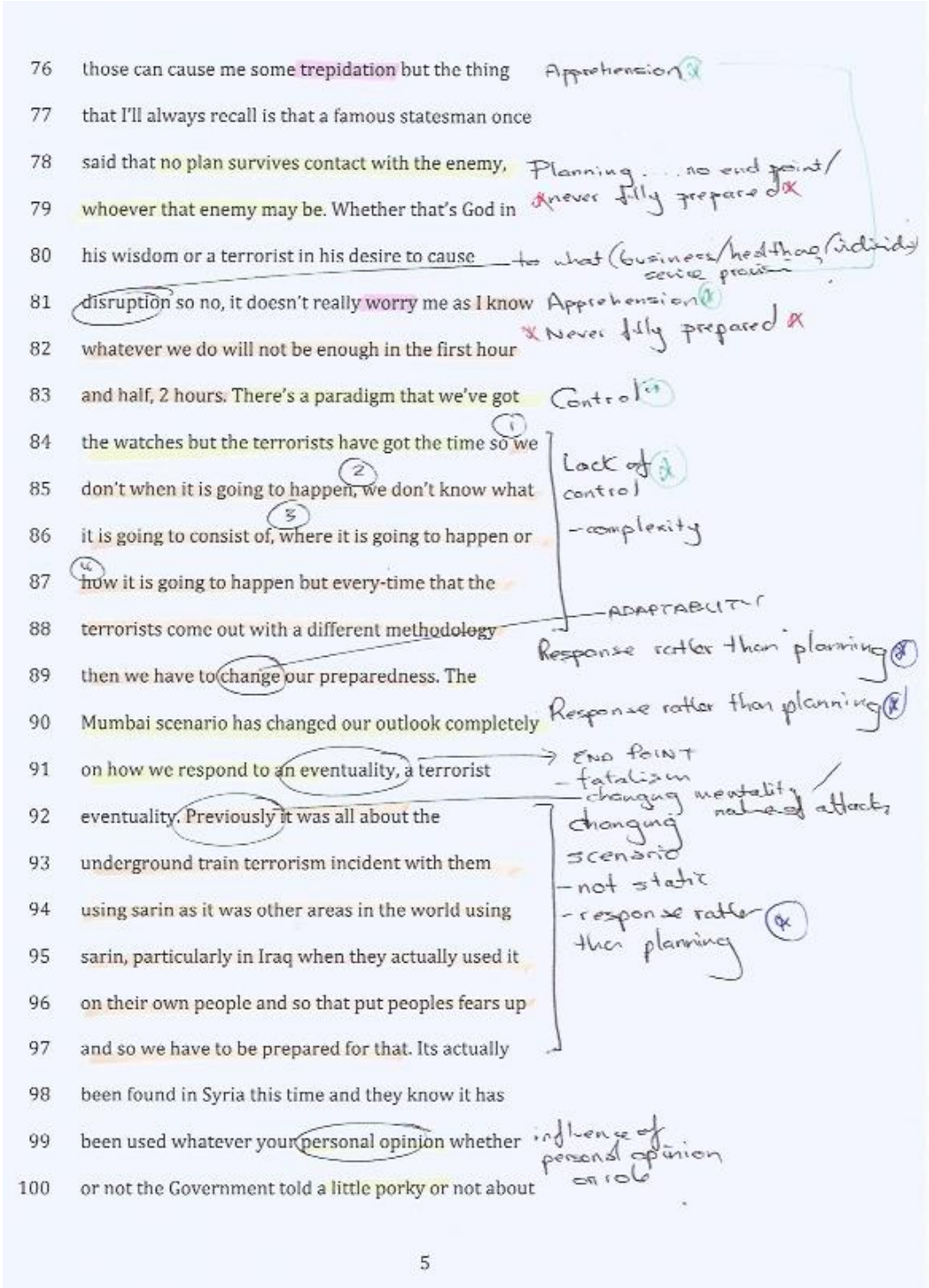
TO REMEMBER	✓
1 psychological aspects of preparedness	
2 evidence-base formation + use of	
3 how are 'you' constantly prepared?	
4	
5	
6	
7	
8	
9	
10	

A5 FILOFAX Ref. 341315 © 2007.

Meeting Notes

- Interview in upstairs conference room of HART building. Relaxed atmosphere, warm drink offered to me. Introduced to other team members in staff room - promotion of the study + appreciation that emergency preparedness should be evidence-based. Commonality in where we both worked previously + mutual contacts, helped break-ice and establish personal credability. Positive interview, narrative response to questions with links to participants own study. Tour on facility offered after interview + accepted. Asked to feedback to team after the write-up.

Appendix 16:- Example from data analysis page (A4 with annotations)

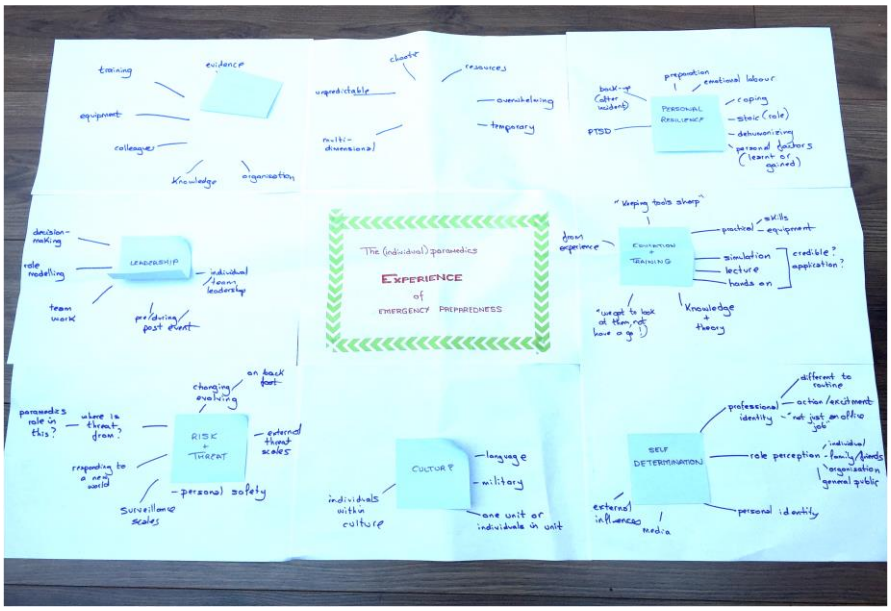


Appendix 17:- Data analysis process (D =descriptive. L = linguistic. C = conceptual)

Extract of transcript with exploratory comments (line numbers shown on original)

There's two types of incident. There's the rising tide and there's the sudden impact incident. So either one of those can cause me some trepidation but the thing that I'll always recall is that a famous statesman once said that no plan survives contact with the enemy, whoever that enemy may be. Whether that's God in his wisdom or a terrorist in his desire to cause disruption so no, it doesn't really worry me as I know whatever we do will not be enough in the first hour and half, 2 hours.	Two types of incidents (D) Anxiety and apprehension (L) (C) – why is this? Lack of control? (C) *'no plan survives contact with the enemy'* (L). Metaphor that you can not plan for the response (C). Stoical (L) (C). Doesn't talk about emotions. Can never do enough (C). Should this be part of the plan?
There's a paradigm that we've got the watches but the terrorists have got the time so we don't when it is going to happen, we don't know what it is going to consist of, where it is going to happen or how it is going to happen but every-time that the terrorists come out with a different methodology then we have to change our preparedness.	*'we've got the watches but the terrorists have the time'* (L). Lack of control (C). Fatalistic (C) Uncertainty (C) Implies complex area (C) Responding to terrorists, rather than planning (C) Concept of terrorism is changing (C)
The Mumbai scenario has changed our outlook completely on how we respond to an eventuality, a terrorist eventuality. Previously it was all about the underground train terrorism incident with them using sarin as it was	World events and their impact (D) Individuals fear in relation to events (D) (L) (C) Use of phrase 'a little porky' (L) in relation to Government. Individual view-point (& possibly media) influencing professional role (C) *'Put it on the backburner'* (L). In this instance, keep it active and current, rather than forget about it. Current threat (D). Responding to threat rather than generic planning (C) U.K. events. Natural threat. Nature of event and response (D)

<u>Appendix 18:-</u> Photograph of theme process (notecards)



	Jessica	David	Philip	Sally	Tony	Ben	Rob	Colin	Mary	Edward	Isla	Harry	James
Self Determination													
Self Identity													
Not just an office job	X	X	X	X	X	X	X	X	X	X	X	X	X
Action Hero	X	X	X	X	X	X	X	X	X	X	X	X	X
How we speak	X	X	X	X	X	X	X	X	X	X	X	X	X
Personal Resilience													
We are not robots	X	X		X	X		X		X	X	X	X	X
Coping mechanisms	X	X	X	X	X	X	X	X	X	X	X	X	X
Needing a back-up plan	X	X		X	X	X	X	X	X	X		X	
Psychological preparation	X	X		X			X	X	X	X	X	X	X
Control													
Risk & Threat													
What is this 'emergency'?	X	X	X	X	X	X	X	X	X	X	X	X	X
Thinking like a terrorist			X	X	X	X	X	X	X	X	X	X	X
We've got the watches….			X	X	X	X	X	X	X	X	X	X	X
Fatalism	X	X	X	X	X	X	X	X	X	X	X	X	X
Uncertainty													
Planning for chaos	X	X	X	X	X	X	X	X	X	X	X	X	X
Wanting certainty in a certain world	X	X	X	X	X	X	X	X	X	X	X	X	X
Safety & Trust													
Equipment	X			X	X	X	X	X	X	X	X	X	X
Training				X	X	X	X	X	X	X	X	X	X
Experience-based practice													
Story-telling													
Is this how they learn?	X	X	X	X	X	X	X	X	X	X	X	X	X
Preparation													
Keeping your tools sharp	X	X	X	X	X	X	X	X	X	X	X	X	X
We got to look at them, not have a go….	X	X	X	X	X	X	X	X	X	X	X	X	X
Evidence-base													
Learning from real-life	X	X	X	X	X	X	X	X	X	X	X	X	X
Practice is a best guess	X	X		X	X	X			X	X	X	X	
How does evidence inform practice?	X	X	X	X	X	X	X	X	X	X	X	X	X